SEQUENCE LISTING

<110> Kleanthous, Harold Al-Garawi, Amal Miller, Charles Tomb, Jean Francois Oomen, Raymond P.

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 ENCODING NOVEL HELICOBACTER POLYPEPTIDES IN THE HELICOBACTER
 GENOME

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<141> 1997-06-24

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atg Met																442
ccc Pro 130																490
gcc Ala																538
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tta Leu																778
gat Asp																826
gcc Ala													atg Met			874
gtc Val																922
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		Leu	420					425					430		
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att to Ile So		et A														1256
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ggg ti Gly Pl		rg A														1496
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	att : Ile															1640

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	7 Arg 101	0				101	5				1020)			
Va. 102	L Val	Pne	гуѕ	ьуs	A1a 103		тте	TTE	Val	Leu 103		ser	Ser	ьeu	104
	ı Leu	Leu	Leu	Lys 1045	Gly		Pro	Lys	Ile 105	Phe		Leu	Leu	Leu 1055	Gly
Ly	s Gly	Gly	Ile 106	Glu		Lys	Phe	Trp 106	Trp		Trp	Trp	Lys 107	Arg	

Phe Gly Met Met Leu Ser Asn Asn His Leu Arg Ala Ala Asn Asp Asn 1080 1085 1075 Asn Asn Asn Ile Pro Pro Arg Phe Ser Ser Thr Ser Ser Lys Asp 1100 1090 1095 Asp Trp Ile Leu Ala Ala Ala Ala His Cys Leu Leu Pro Thr Glu Glu 1110 1115 Glu Ser Ala Ala Ser Ala Phe Phe Lys Arg Arg Arg Arg His Gly 1130 1135 1125 Asn Asn Ile Ile Lys Thr Val Val Arg Cys Phe Phe Val Lys Lys Gly 1140 1145 1150 Leu Leu Leu Leu Leu Ala Leu Leu Ser Tyr Gly Gly Glu Lys Lys 1155 1160 1165 Lys Asp Gln Gln Ala Phe Arg Arg Lys Ser Lys Lys Lys Pro Ile 1170 1175 1180 Leu Leu Gly Phe Glu Glu Ile His His Lys Leu Leu Gly Ile Glu Glu 1190 1195 Cys Arg Arg Arg Arg Phe His Gln Gln Thr Gly Gly Lys Gln 1205 1210 1215 Gln Leu Glu Phe Phe Leu Pro Pro Asn Phe Val Val Val Val Gly 1220 1225 1230 Gly Gly Glu Ser Ser Leu Ile Lys Lys Gly Ser Ser Leu Cys Cys 1235 1240 1245 Lys Thr Tyr Tyr Tyr Tyr Arg Thr Ser Ser Asp Lys Thr Thr Phe Trp 1250 1255 1260 Trp Ile Phe Gln Met Ile Ile Thr Ser Ser Ser Ser Leu Asn Gln 1265 1270 1275 128 Gln Asn Ser Ser Trp Leu Leu Ser Ala Gly Gly Ala Ala Leu Val 1285 1290 1295 Asn Asn Asn Asn Asn Ala Leu Leu His His His Thr Leu Val Val Glu 1305 1310 1300 Leu Leu His His Leu Ala Val Lys Lys Leu Asn Asp Asp Ile 1315 1320 Arg Arg Met Ala Asn Lys Ile Ile Glu Gln Gln Gln Gln Ser Leu 1330 1335 1340 Arg Arg Lys Asn Lys Ile Ile Cys Ala Leu Leu Gly Val Tyr Tyr 1350 1355 Tyr Tyr Gln Gly Gly Arg Leu His His Cys Leu Asn Asn Leu Gln Gln 1370 1375 1365 Ile Glu Glu Asn Trp Ala Ala Ala Ala Trp Ala Leu Leu Gly Ser 1380 1385 Ser Gly Val Val Thr Ile Phe Phe Gln Arg Gly Gly Phe Gln Gln Gln 1400 Gln Gln Cys Gly Ile Ile Ile Phe Thr Asn Asn Gln Leu Val Val Val 1415 Thr Thr Gly Gly Gly Gly Gly Leu Asn Asn Cys Gly Gly Gly 1430 1435 Ser Leu Leu Leu Phe Asn Asn Glu Lys Tyr Tyr Ser Ile Ser Ser Ser 1450 1455 1445 Ser Arg Ser Ile Ile Gly Lys Leu Leu Val Tyr Tyr Leu Lys Ile Ile 1465 Ser Asn Ile Ile Ile Arg Arg Arg Arg Leu Lys Arg Arg Leu Thr 1475 1480 1485 Thr Leu Thr Leu Leu Cys Ser Met Thr Thr Ser Val Gln Gln Gln 1495 Gln Gly Gln Gln Leu Arg Glu Glu Phe Ile Ile Met Gly Gly Glu Lys 1515 1510 Ser Ser Ile Leu Gln Gln Gln Gln Ala Arg Gln Gln Pro Thr Asn Asn 1530 Asn Thr Thr Lys Arg Met Met Asn Asn Phe Phe Phe Phe Phe Phe

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Leu 1585		Leu	Lys	Ala	Ala 1590		Phe	Asp	Asp	Ile 1595		Thr	Thr	Thr	Leu 160	
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Ser	Ser 165	Thr		Lys	Lys	Asn 1655		Gln	Asp	Tyr	Trp 1660		Ala	Ala	Ala	
Ala 1665	Ile		Arg	Arg	Met 1670	Ser		Tyr	Gln	Ser 1675	Ser		Ser	Ser	Phe 168	
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gtg atc cct Val Ile Pro		-		Glu Se			o Gly	_	264
caa cat aaa Gln His Lys 50									312
ctt ttg tgc Leu Leu Cys 65				-			_	_	360
gca agg ttg Ala Arg Leu 80	_			Phe Al		_	_		408
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gac gct att Asp Ala Ile 145		_				_	_		600
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	Gln		100					105					110		_	
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	cgg Arg															104
	atc Ile 20				_			_	_	_			-		-	152
	gcg Ala															200
	aca Thr															248
	atg Met															296
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aag Lys	cga Arg 100	taag	gttat	ta t	caaat	ttt	ca to	gcgag	gaato	g gga	aatga	atat	gggg	gtgtt	tat	400
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Cys Asn Cys Met Arg Trp Leu Val Lys Gly Gly Ile Cys Ser His Ala
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Lys Lys Ile Val Val Asp Pro Ile Thr Arg Ile Glu Gly His Leu Arg
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Ile Glu Val Ile Val Asp Asp Asp Asn Val Ile Thr Asp Ala Phe Ser
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Tyr Ser His Tyr Lys Ala Gly Ile Thr Ala Val Glu Asn Ala Leu Gly
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					cag Gln											256
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140

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345

Ile Phe Lys Ile Lys Asp Ala Gly Phe Val Ala Val Glu Arg Asp Ser

Leu Tyr Asn Phe Ile Gln Lys Phe

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248

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                           40
Lys Asn Glu Ala Tyr Phe Ile Ser Asp Glu Glu Asp Lys Asn Tyr Val
                       55
Leu Val Pro Asp Asn Val Ile Ser Leu Leu Ala Glu Asn Ala Arg Lys
                                       75
                   70
Ala Phe Glu Ala Arg Leu Arg Ala Glu Leu Glu Arg Asp Ile Ile Thr
                                   90
               85
Gln Ala Pro Ile Asp Phe Glu Asp Val Arg Glu Val Ser Leu Gln Leu
                                                  110
                              105
Leu Glu Asn Leu Arg Gln Lys Asp Gly Asn Leu Pro Asn Ile Asn Thr
                           120
                                              125
Leu Asn Phe Val Lys Gln Ile Lys Lys Glu His Pro Asn Leu Phe Phe
                       135
                                          140
Asn Phe Asp Asn Met Phe Lys Gln Pro Pro Phe Asn Glu Asn Asn Phe
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Glu Asn Phe Asp Asn Ser Asp Glu Glu Asn Phe
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                                                      Met Asn
                                                                   104
Glu Asn Ile Asn Glu Asn Ile Phe Glu Glu Val Gly Asp Ala Cys Val
aaa tgc gct aag tgc gtg cca ggc tgc acc ata tac cgc att cat aaa
                                                                   152
Lys Cys Ala Lys Cys Val Pro Gly Cys Thr Ile Tyr Arg Ile His Lys
     20
                                                                   200
gac gag gcg act tcg cct aga ggc ttt tta gat ttg atg cgc tta aac
Asp Glu Ala Thr Ser Pro Arg Gly Phe Leu Asp Leu Met Arg Leu Asn
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 35
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gct caa aac aag ctc caa tta gac acg aat tta aaa cac ctt tta gaa

Ala	Gln	Asn	Lys	Leu 55	Gln	Leu	Asp	Thr	Asn 60	Leu	Lys	His	Leu	Leu 65	Glu	
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ccc Pro	ata Ile	gac Asp 85	acc Thr	tta Leu	ata Ile	gaa Glu	aaa Lys 90	gcc Ala	aga Arg	gaa Glu	aaa Lys	atc Ile 95	gct Ala	caa Gln	aag Lys	344
cat His	ggc Gly 100	atc Ile	gct Ala	tgg Trp	tat Tyr	aaa Lys 105	aaa Lys	tcc Ser	tat Tyr	ttt Phe	tcc Ser 110	ctt Leu	tta Leu	aaa Lys	aac Asn	392
cgc Arg 115	aaa Lys	aaa Lys	atg Met	gat Asp	agg Arg 120	gtg Val	ttt Phe	tca Ser	act Thr	gcg Ala 125	cat His	ttt Phe	tta Leu	gcc Ala	cct Pro 130	440
tgc Cys	gtt Val	ttc Phe	aag Lys	caa Gln 135	gta Val	Gly ggg	gat Asp	agt Ser	tta Leu 140	gag Glu	cct Pro	agg Arg	gcg Ala	gtg Val 145	ttt Phe	488
aaa Lys	ggt Gly	ttg Leu	ttc Phe 150	aaa Lys	cgc Arg	ttt Phe	aaa Lys	aaa Lys 155	agc Ser	gcg Ala	ctg Leu	cct Pro	cct Pro 160	tta Leu	aat Asn	536
caa Gln	aaa Lys	agt Ser 165	ttt Phe	tta Leu	caa Gln	aag Lys	cat His 170	gca Ala	gaa Glu	atg Met	aag Lys	ctt Leu 175	tta Leu	gaa Glu	aac Asn	584
ccc Pro	att Ile 180	caa Gln	aaa Lys	gtg Val	gcc Ala	att Ile 185	ttt Phe	ata Ile	ggg	tgc Cys	ttg Leu 190	agc Ser	aat Asn	tac Tyr	cat His	632
tac Tyr 195	cag Gln	caa Gln	gtg Val	Gly	gaa Glu 200	agc Ser	ttg Leu	ttg Leu	tat Tyr	att Ile 205	tta Leu	gaa Glu	aaa Lys	ctc Leu	aac Asn 210	680
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ttt Phe	acc Thr	ggc Gly	gat Asp 230	aaa Lys	gac Asp	acc Thr	acg Thr	ctt Leu 235	ttt Phe	tta Leu	gtg Val	aaa Lys	aaa Lys 240	aac Asn	ata Ile	776
gaa Glu	tgg Trp	ttt Phe 245	Glu	agc Ser	tat Tyr	tta Leu	gat Asp 250	aaa Lys	gtg Val	gat Asp	gcg Ala	atc Ile 255	att Ile	gtg Val	cct Pro	824
gaa Glu	gcc Ala 260	aca Thr	tgc Cys	gct Ala	aca Thr	tgc Cys 265	tca Ser	tca Ser	acg Thr	att Ile	att Ile 270	aca Thr	agg Arg	tgt Cys	ttt Phe	872
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                           40
Leu Asn Ala Gln Asn Lys Leu Gln Leu Asp Thr Asn Leu Lys His Leu
                       55
Leu Glu Thr Cys Phe Leu Cys Thr Ala Cys Val Glu Ile Cys Pro Phe
                   70
His Leu Pro Ile Asp Thr Leu Ile Glu Lys Ala Arg Glu Lys Ile Ala
                                   90
               85
Gln Lys His Gly Ile Ala Trp Tyr Lys Lys Ser Tyr Phe Ser Leu Leu
                              105
                                                  110
           100
Lys Asn Arg Lys Lys Met Asp Arg Val Phe Ser Thr Ala His Phe Leu
                          120
                                               125
       115
Ala Pro Cys Val Phe Lys Gln Val Gly Asp Ser Leu Glu Pro Arg Ala
                                          140
                       135
Val Phe Lys Gly Leu Phe Lys Arg Phe Lys Lys Ser Ala Leu Pro Pro
                  150
                                      155
Leu Asn Gln Lys Ser Phe Leu Gln Lys His Ala Glu Met Lys Leu Leu
                                  170
               165
Glu Asn Pro Ile Gln Lys Val Ala Ile Phe Ile Gly Cys Leu Ser Asn
                              185
           180
Tyr His Tyr Gln Gln Val Gly Glu Ser Leu Leu Tyr Ile Leu Glu Lys
                                              205
                           200
Leu Asn Ile Gln Ala Ile Ile Pro Lys Gln Glu Cys Cys Ser Ala Pro
                       215
                                          220
Ala Tyr Phe Thr Gly Asp Lys Asp Thr Thr Leu Phe Leu Val Lys Lys
                                      235
                  230
Asn Ile Glu Trp Phe Glu Ser Tyr Leu Asp Lys Val Asp Ala Ile Ile
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Cys Phe Trp Ala Lys Lys Ile Arg Ile Cys Met
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57

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aca Thr 20	caa Gln	aat Asn	gcg Ala	cga Arg	tgg Trp 25	ata Ile	gat Asp	caa Gln	aaa Lys	tgc Cys 30	acc Thr	cct Pro	gat Asp	gtg Val	ttg Leu 35	153
tct Ser	ctt Leu	gtt Val	gct Ala	gat Asp 40	tgt Cys	att Ile	tta Leu	gag Glu	ttt Phe 45	acg Thr	caa Gln	tgt Cys	aat Asn	att Ile 50	gga Gly	201
aaa Lys	tca Ser	ttt Phe	tct Ser 55	att Ile	agg Arg	gat Asp	att Ile	tgg Trp 60	gat Asp	agc Ser	cct Pro	tac Tyr	acc Thr 65	aat Asn	gaa Glu	249
aat Asn	gtt Val	aaa Lys 70	atg Met	att Ile	ttt Phe	tct Ser	aaa Lys 75	cct Pro	gat Asp	tta Leu	aat Asn	tct Ser 80	gac Asp	ttt Phe	tcc Ser	297
atg Met	cat His 85	gaa Glu	tac Tyr	gat Asp	aag Lys	ttt Phe 90	ttt Phe	tct Ser	cag Gln	cct Pro	att Ile 95	aaa Lys	tta Leu	tta Leu	gcc Ala	345
tat Tyr 100	agc Ser	ggt Gly	att Ile	tta Leu	ttt Phe 105	gaa Glu	aca Thr	aaa Lys	act Thr	ggc Gly 110	aat Asn	aga Arg	aat Asn	att Ile	tat Tyr 115	393
acc Thr	ata Ile	caa Gln	aac Asn	ata Ile 120	gag Glu	cta Leu	tta Leu	gaa Glu	tat Tyr 125	ctc Leu	atg Met	caa Gln	aga Arg	gaa Glu 130	aca Thr	441
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agt Ser	Gly ggg	att Ile 150	tat Tyr	cct Pro	tta Leu	ttt Phe	gac Asp 155	aac Asn	ttt Phe	tta Leu	caa Gln	aaa Lys 160	caa Gln	gac Asp	aca Thr	537
gaa Glu	agt Ser 165	ttt Phe	aag Lys	caa Gln	cta Leu	aaa Lys 170	gat Asp	ggt Gly	ttc Phe	act Thr	cat His 175	ttt Phe	act Thr	atc Ile	aat Asn	585
aac Asn 180	aca Thr	gca Ala	atc Ile	aat Asn	aac Asn 185	gct Ala	acg Thr	gaa Glu	tgt Cys	ttt Phe 190	agg Arg	att Ile	ttt Phe	act Thr	aaa Lys 195	633
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Gla	tat Tyr	ttg Leu	tcc Ser 215	Asn	act Thr	ata Ile	att Ile	aca Thr 220	aaa Lys	gat Asp	gag Glu	ctt Leu	aat Asn 225	Tyr	aat Asn	729
cgt Arg	atc Ile	aat Asn 230	Trp	cga Arg	gat Asp	ata Ile	gga Gly 235	Lys	gat Asp	aaa Lys	aat Asn	acc Thr 240	Thr	aga Arg	caa Gln	777

gaa Glu	tac Tyr 245	gat Asp	ctt Leu	ata Ile	aac Asn	tct Ser 250	aaa Lys	agg Arg	att Ile	gct Ala	aat Asn 255	tct Ser	aac Asn	tat Tyr	ctt Leu	825
att Ile 260	tca Ser	aaa Lys	gct Ala	aag Lys	aaa Lys 265	gtg Val	gtg Val	aaa Lys	cga Arg	tat Tyr 270	aat Asn	gat Asp	aga Arg	ttt Phe	aat Asn 275	873
aat Asn	tct Ser	ctc Leu	tct Ser	gaa Glu 280	gta Val	aaa Lys	caa Gln	gaa Glu	aaa Lys 285	gaa Glu	gag Glu	tcg Ser	caa Gln	gcc Ala 290	aca Thr	921
caa Gln	ata Ile	cac His	cat His 295	att Ile	ttt Phe	ccc Pro	atc Ile	caa Gln 300	gac Asp	ttt Phe	ccc Pro	att Ile	att Ile 305	gct Ala	aac Asn	969
tat Tyr	ata Ile	gag Glu 310	aat Asn	ctt Leu	atc Ile	gca Ala	ctc Leu 315	act Thr	cct Pro	aat Asn	caa Gln	cat His 320	ttt Phe	att Ile	tac Tyr	1017
gcc Ala	cac His 325	cct Pro	aat Asn	aat Asn	caa Gln	acc Thr 330	cgc Arg	ttg Leu	att Ile	gat Asp	aaa Lys 335	gat Asp	ttt Phe	caa Gln	tat Tyr	1065
atc Ile 340	tgc Cys	tta Leu	tta Leu	gct Ala	aaa Lys 345	acg Thr	acc Thr	aca Thr	att Ile	ctt Leu 350	aat Asn	gac Asp	act Thr	caa Gln	ggc Gly 355	1113
gta Val	tat Tyr	gat Asp	tgg Trp	aat Asn 360	gat Asp	tat Tyr	att Ile	gtt Val	gtg Val 365	ttg Leu	aat Asn	atg Met	ggc Gly	ctc Leu 370	aaa Lys	1161
aca Thr	act Thr	atc Ile	ttt Phe 375	tct Ser	caa Gln	gtc Val	aag Lys	aac Asn 380	gaa Glu	tgg Trp	gaa Glu	tta Leu	tta Leu 385	aaa Lys	gta Val	1209
ata Ile	gat Asp	gct Ala 390	ttt Phe	tat Tyr	ttt Phe	gat Asp	ttt Phe 395	aac Asn	aag Lys	agc Ser	aaa Lys	gat Asp 400	cca Pro	agt Ser	tgg Trp	1257
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taa	taag	ttt	tatt	gaaa	ct g	gcta	taaa	a ac	ccgc	ttga	ctt	atct	tat (cctt	tt	1361
	<	212>	419 PRT		acte	r py	lori									
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		Leu	20				Asp	25				Phe	30		Cys	
		35					40					45				

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Thr Asn Glu Asn Val Lys Met Ile Phe Ser Lys Pro Asp Leu Asn Ser
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                   70
Asp Phe Ser Met His Glu Tyr Asp Lys Phe Phe Ser Gln Pro Ile Lys
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Leu Leu Ala Tyr Ser Gly Ile Leu Phe Glu Thr Lys Thr Gly Asn Arg
                               105
           100
Asn Ile Tyr Thr Ile Gln Asn Ile Glu Leu Leu Glu Tyr Leu Met Gln
                           120
                                               125
       115
Arg Glu Thr Asn Ala Leu Lys Phe Leu Ile Leu Tyr Ile Gln Lys Val
                       135
                                           140
Leu Met Asp Ser Gly Ile Tyr Pro Leu Phe Asp Asn Phe Leu Gln Lys
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                                       155
Gln Asp Thr Glu Ser Phe Lys Gln Leu Lys Asp Gly Phe Thr His Phe
                                   170
               165
Thr Ile Asn Asn Thr Ala Ile Asn Asn Ala Thr Glu Cys Phe Arg Ile
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          180
Phe Thr Lys Ile Ile Asn Pro Leu Ala Phe Tyr Tyr Gly Lys Lys Gly
                                               205
                          200
       195
Thr Arg Lys Gly Tyr Leu Ser Asn Thr Ile Ile Thr Lys Asp Glu Leu
                                           220
                       215
Asn Tyr Asn Arg Ile Asn Trp Arg Asp Ile Gly Lys Asp Lys Asn Thr
                                       235
                   230
Thr Arg Gln Glu Tyr Asp Leu Ile Asn Ser Lys Arg Ile Ala Asn Ser
                                  250
                245
Asn Tyr Leu Ile Ser Lys Ala Lys Lys Val Val Lys Arg Tyr Asn Asp
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Arg Phe Asn Asn Ser Leu Ser Glu Val Lys Gln Glu Lys Glu Glu Ser
                                               285
                            280
Gln Ala Thr Gln Ile His His Ile Phe Pro Ile Gln Asp Phe Pro Ile
                                            300
                       295
Ile Ala Asn Tyr Ile Glu Asn Leu Ile Ala Leu Thr Pro Asn Gln His
                                       315
                    310
Phe Ile Tyr Ala His Pro Asn Asn Gln Thr Arg Leu Ile Asp Lys Asp
                                   330
                325
Phe Gln Tyr Ile Cys Leu Leu Ala Lys Thr Thr Thr Ile Leu Asn Asp
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Thr Gln Gly Val Tyr Asp Trp Asn Asp Tyr Ile Val Val Leu Asn Met
                            360
                                               365
Gly Leu Lys Thr Thr Ile Phe Ser Gln Val Lys Asn Glu Trp Glu Leu
                        375
                                           380
Leu Lys Val Ile Asp Ala Phe Tyr Phe Asp Phe Asn Lys Ser Lys Asp
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gcg att aga gat aca ggg cat ttt ttg gat tgc tct ttt gat att cat Ala Ile Arg Asp Thr Gly His Phe Leu Asp Cys Ser Phe Asp Ile His 20 25 30	154
gat agc gtg ggg gtt tta gat gag tat ttc gcg caa tca gag ttt ttt Asp Ser Val Gly Val Leu Asp Glu Tyr Phe Ala Gln Ser Glu Phe Phe 35 40 45 50	202
acg aat att gaa gat ttt gaa aag cat tta gag caa tct aag gat atg Thr Asn Ile Glu Asp Phe Glu Lys His Leu Glu Gln Ser Lys Asp Met 55 60 65	250
ggt aaa gaa atc aac tat ttg agt gtt tgc acg cct acg cac acg cat Gly Lys Glu Ile Asn Tyr Leu Ser Val Cys Thr Pro Thr His Thr His 70 75 80	298
ttt gat cac atc cgt ttc ggg tta aga aac ggc atg cat gtg att tgt Phe Asp His Ile Arg Phe Gly Leu Arg Asn Gly Met His Val Ile Cys 85 90 95	346
gaa aaa ccc tta gtt tta gac cct ggc gaa ata caa gaa ttg aaa gat Glu Lys Pro Leu Val Leu Asp Pro Gly Glu Ile Gln Glu Leu Lys Asp 100 105 110	394
tta gag gtg aaa cac caa aaa agg gtg ttt agt ctt tta ccc ttg cgc Leu Glu Val Lys His Gln Lys Arg Val Phe Ser Leu Leu Pro Leu Arg 115 120 125 130	442
ttg cat tgc gac acg ctg gct ttg aaa gaa aaa att aag agc gaa tta Leu His Cys Asp Thr Leu Ala Leu Lys Glu Lys Ile Lys Ser Glu Leu 135 140 145	490
gac aaa aac cct agc aag gtg ttt gac atc acg ctc act tat atc agc Asp Lys Asn Pro Ser Lys Val Phe Asp Ile Thr Leu Thr Tyr Ile Ser 150 155 160	538
gtt caa ggg aaa tgg tat ttt tct tca tgg cga gcg gat gtg aat agg Val Gln Gly Lys Trp Tyr Phe Ser Ser Trp Arg Ala Asp Val Asn Arg 165 170 175	586
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atc tat ttg ttt gga agc gtt aaa gac aag gtt atc aat aaa gaa gag Ile Tyr Leu Phe Gly Ser Val Lys Asp Lys Val Ile Asn Lys Glu Glu 195 200 205 210	682
cct gat tgc gta ggg gga tac tct ttt tagagcatgc caaaataaga Pro Asp Cys Val Gly Gly Tyr Ser Phe 215	729

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                            40
Phe Phe Thr Asn Ile Glu Asp Phe Glu Lys His Leu Glu Gln Ser Lys
                        55
Asp Met Gly Lys Glu Ile Asn Tyr Leu Ser Val Cys Thr Pro Thr His
                    70
Thr His Phe Asp His Ile Arg Phe Gly Leu Arg Asn Gly Met His Val
Ile Cys Glu Lys Pro Leu Val Leu Asp Pro Gly Glu Ile Gln Glu Leu
            100
Lys Asp Leu Glu Val Lys His Gln Lys Arg Val Phe Ser Leu Leu Pro
                            120
        115
Leu Arg Leu His Cys Asp Thr Leu Ala Leu Lys Glu Lys Ile Lys Ser
                        135
    130
Glu Leu Asp Lys Asn Pro Ser Lys Val Phe Asp Ile Thr Leu Thr Tyr
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215

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180

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10

90

170

60

140

125

75

155

25

105

185

Thr Leu Ile Tyr Leu Phe Gly Ser Val Lys Asp Lys Val Ile Asn Lys 200

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152 ttg ccg gac tcc ttt gtc ttg gtc gct ctt tta tcg ttt gtc gtg ttt Leu Pro Asp Ser Phe Val Leu Val Ala Leu Leu Ser Phe Val Val Phe 25 20

gtt Val 35	ctt Leu	gtt Val	tat Tyr	tgc Cys	ttg Leu 40	aca Thr	Gly ggg	caa Gln	gac Asp	gct Ala 45	ttt Phe	tct Ser	gtc Val	att Ile	tct Ser 50	200
agt Ser	tgg Trp	Gly aaa	aat Asn	ggc Gly 55	gct Ala	tgg Trp	acg Thr	ctt Leu	tta Leu 60	ggt Gly	ttt Phe	tct Ser	atg Met	caa Gln 65	atg Met	248
											aac Asn					296
caa Gln	aag Lys	ctt Leu 85	tta Leu	aaa Lys	tat Tyr	cta Leu	gcg Ala 90	tct Ser	tta Leu	cct Pro	aaa Lys	ggg Gly 95	tat Tyr	tat Tyr	acg Thr	344
gct Ala	tta Leu 100	tgg Trp	ttg Leu	gtt Val	act Thr	ttt Phe 105	tta Leu	tcg Ser	tta Leu	atc Ile	gct Ala 110	aat Asn	tgg Trp	atc Ile	aac Asn	392
tgg Trp 115	ggt Gly	ttt Phe	ggc Gly	ttg Leu	gtg Val 120	att Ile	agt Ser	gcg Ala	att Ile	ttt Phe 125	gca Ala	aaa Lys	gag Glu	atc Ile	gcc Ala 130	440
aaa Lys	aat Asn	gtt Val	aag Lys	ggg Gly 135	gtg Val	gat Asp	tac Tyr	agg Arg	ctg Leu 140	ctc Leu	att Ile	gct Ala	agc Ser	gct Ala 145	tat Tyr	488
											ggc Gly					536
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											ttt Phe 190					632
tta Leu 195	atc Ile	att Ile	ata Ile	Gly	atc Ile 200	att Ile	ctt Leu	gta Val	ggg	tta Leu 205	ccc Pro	ttt Phe	tta Leu	atg Met	gca Ala 210	680
atg Met	atc Ile	cac His	cct Pro	aaa Lys 215	aaa Lys	gaa Glu	gaa Glu	atc Ile	gtt Val 220	gag Glu	att Ile	gat Asp	tca Ser	aag Lys 225	ctt Leu	728
											agc Ser					776
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ttg Leu	gtt Val	ttt Phe	ttg Leu	ggt Gly	ttt Phe	ggg Gly	tat Tyr	ctt Leu	ggt Gly	gtt Val	tat Tyr	ttt Phe	ttt Phe	aaa Lys	ggg Gly	872

270 265 260 gga ggg att agt tta aac att gtc aat acg att ttc ctt ttt tta ggg 920 Gly Gly Ile Ser Leu Asn Ile Val Asn Thr Ile Phe Leu Phe Leu Gly 280 att tta ctg cat aaa acc cct tta gct tat gtg aaa gcg atc gat cgt 968 Ile Leu Leu His Lys Thr Pro Leu Ala Tyr Val Lys Ala Ile Asp Arg 300 tcc gct ang agc gtg gct ggg att tta ttg caa ttc cct ttt tac gct 1016 Ser Ala Xaa Ser Val Ala Gly Ile Leu Leu Gln Phe Pro Phe Tyr Ala 1064 ggg att atg ggg atg atg gca agc cat agc gtg ggg ggt cat tct tta Gly Ile Met Gly Met Met Ala Ser His Ser Val Gly Gly His Ser Leu 330 gcg caa atg ctt tct tta gct ttc acg cac atc gct aat gaa aaa act 1112 Ala Gln Met Leu Ser Leu Ala Phe Thr His Ile Ala Asn Glu Lys Thr 345 1160 ttc gtg ctc atg act ttt ttg agc gca ggg att gtc aat att ttt att Phe Val Leu Met Thr Phe Leu Ser Ala Gly Ile Val Asn Ile Phe Ile 360 365 1208 ccq tct ggc gga ggg caa tgg gcg att caa gct cct atc atg ctt ccg Pro Ser Gly Gly Gln Trp Ala Ile Gln Ala Pro Ile Met Leu Pro 375 380 gct ggg caa agc tta ggg gtg gat ccg gga gtg gtt tct atg gct atc 1256 Ala Gly Gln Ser Leu Gly Val Asp Pro Gly Val Val Ser Met Ala Ile 395 gct tgg gga gat gct tgg acg aat atg ata cag cct ttt tgg gct ttg 1304 Ala Trp Gly Asp Ala Trp Thr Asn Met Ile Gln Pro Phe Trp Ala Leu 1352 ccc gct tta gcc att gcg ggt ttg ggc gct aaa gat att atg ggc tat Pro Ala Leu Ala Ile Ala Gly Leu Gly Ala Lys Asp Ile Met Gly Tyr 425 tgc gtt ttg act tta att ttt gta ggc tta gtc gtg tgt ggg gtg ttt 1400 Cys Val Leu Thr Leu Ile Phe Val Gly Leu Val Val Cys Gly Val Phe 1452 tat ttt tta gtg tgagtttttt atgcctaaaa ccatgctctt ttcaatgggg Tyr Phe Leu Val 1465 taaggttttc tct

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                                        75
Leu Val Gln Lys Leu Leu Lys Tyr Leu Ala Ser Leu Pro Lys Gly Tyr
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                85
Tyr Thr Ala Leu Trp Leu Val Thr Phe Leu Ser Leu Ile Ala Asn Trp
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Ile Asn Trp Gly Phe Gly Leu Val Ile Ser Ala Ile Phe Ala Lys Glu
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Ala Tyr Ser Gly Phe Val Ile Trp His Gly Gly Leu Ser Gly Ser Ile
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                                        155
Pro Leu Ser Val Ala Thr Gln Asn Glu Asn Leu Ser Lys Ile Ser Ala
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                                    170
Gly Val Ile Glu Lys Ala Ile Pro Ile Ser Gln Thr Ile Phe Ser Ser
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Tyr Asn Leu Ile Ile Ile Gly Ile Ile Leu Val Gly Leu Pro Phe Leu
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                                                205
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Met Ala Met Ile His Pro Lys Lys Glu Glu Ile Val Glu Ile Asp Ser
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Lys Leu Leu Lys Asp Glu Tyr Lys Glu Ile Glu Leu Ile Ser His Gln
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                                        235
Gln Asp Lys Thr Ile Ala His Phe Leu Glu Asn Ser Ala Leu Leu Ser
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Tyr Leu Leu Val Phe Leu Gly Phe Gly Tyr Leu Gly Val Tyr Phe Phe
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Lys Gly Gly Gly Ile Ser Leu Asn Ile Val Asn Thr Ile Phe Leu Phe
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Asp Arg Ser Ala Xaa Ser Val Ala Gly Ile Leu Leu Gln Phe Pro Phe
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Tyr Ala Gly Ile Met Gly Met Met Ala Ser His Ser Val Gly Gly His
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Ser Leu Ala Gln Met Leu Ser Leu Ala Phe Thr His Ile Ala Asn Glu
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Lys Thr Phe Val Leu Met Thr Phe Leu Ser Ala Gly Ile Val Asn Ile
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Phe Ile Pro Ser Gly Gly Gly Gln Trp Ala Ile Gln Ala Pro Ile Met
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Leu Pro Ala Gly Gln Ser Leu Gly Val Asp Pro Gly Val Val Ser Met
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Ala Ile Ala Trp Gly Asp Ala Trp Thr Asn Met Ile Gln Pro Phe Trp
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Trp Met Val Val Ile Gly Ala Leu Ile Cys Met Leu Leu Gly Val Phe
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                                                                      152
Ile Phe Phe Thr Ser Met Ser Val Lys Lys Phe Leu Ser Ala Tyr Leu
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Asn Ala Tyr Leu Asp Gln Arg Pro His Ile Lys Gly Met Gly Ile Ala
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Gly Thr Pro Phe Glu Cys Glu Gly Phe Phe Lys Ile Ala Cys Val Ser
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Lys Glu Leu Ser Phe Leu Asp Ser Gln Asn Ser Pro Ile Val Asn Phe
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                                                                      392
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Leu Ser Val His Ser Gln Ile Lys Ser Pro Ile Leu Glu Gln Asp Met
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                                             110
                                                                       440
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Gln Gln Lys Ile Ser Gln Ile Pro Leu Lys Asp Leu Asn Ala Leu Leu
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                    120
                                         125
115
                                                                       488
gaa aaa atg aaa ccc acg cgc ttg aat tgc tct tta aca ttc aac gct
Glu Lys Met Lys Pro Thr Arg Leu Asn Cys Ser Leu Thr Phe Asn Ala
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                                                                       536
cta gat gaa aaa acc tta aac gac aac tta aaa tgc gat ttg act aat
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Ala Glu Asn Ile Leu Ala Tyr Thr Phe Phe Gln Glu Gly Leu Met Glu
        165
                             170
                                                                       632
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Ala Gln Glu Asn Leu Ser Leu Lys Asn Ile Phe Lys Thr Leu Ser Ser
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gcg Ala	cca Pro	aag Lys	ttg Leu	ggc Gly 215	gtt Val	tct Ser	atc Ile	caa Gln	gcg Ala 220	cac His	cat His	ctt Leu	aaa Lys	aac Asn 225	ctt Leu	728
ttg Leu	gaa Glu	gcc Ala	ttt Phe 230	tat Tyr	cac His	caa Gln	aat Asn	aaa Lys 235	gag Glu	agt Ser	ttg Leu	ggc Gly	ttt Phe 240	ttt Phe	tcc Ser	776
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gcc Ala	ttt Phe	gtt Val	tct Ser	atg Met 295	gct Ala	aaa Lys	gac Asp	aaa Lys	cga Arg 300	tcc Ser	caa Gln	atc Ile	gct Ala	ctt Leu 305	aac Asn	968
gcc Ala	caa Gln	gct Ala	aaa Lys 310	gac Asp	aac Asn	gcc Ala	aag Lys	cta Leu 315	act Thr	ttt Phe	aac Asn	gcc Ala	ttg Leu 320	tta Leu	gaa Glu	1016
agc Ser	ctt Leu	agc Ser 325	gtg Val	aat Asn	ttc Phe	ttt Phe	caa Gln 330	tct Ser	tac Tyr	aaa Lys	ata Ile	agc Ser 335	cat His	gag Glu		1061
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Len	Thr	Len	Ser		His	Ser	Gln	Ile		Ser	Pro	Ile	. Leu		Gln	

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Glu Ser Ala Leu Ala Ser Leu Glu Asn Tyr Phe Met Ala Leu Phe Gln
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gag gac gaa aag aaa gga tta ttt gct gga act gca aat gaa aat tcg
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Glu Asp Glu Lys Lys Gly Leu Phe Ala Gly Thr Ala Asn Glu Asn Ser
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cac ggc ctt tct tta atg gct tta ata ggg gta ttg gtt ttt ggg ggc
His Gly Leu Ser Leu Met Ala Leu Ile Gly Val Leu Val Phe Gly Gly
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ttt Phe	aaa Lys 100	tac Tyr	tac Tyr	ata Ile	gaa Glu	aat Asn 105	agt Ser	gaa Glu	aat Asn	att Ile	ggc Gly 110	gat Asp	att Ile	gcg Ala	ttt Phe	392
taa	gtgaa	aaa a	accc	cctat	cc cc	cctta	aaga	g ag	ctta	atta	atg	gtca	atc a	att		445
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Asn	Ser		20 Gly	Leu	Ser	Leu		25 Ala	Leu	Ile	Gly		30 Leu	Val	Phe	
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Ala	Phe		100					103					110			
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tagtcaagtc gctattactg caagcccggt gagcgcagcg gtnggtgttt atg agc Met Ser 1	
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gcg ttc ttt ttg agc gtg tat tta agg gct gat gat ttg gtt act tac
Ala Phe Phe Leu Ser Val Tyr Leu Arg Ala Asp Asp Leu Val Thr Tyr
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acc atc atc aaa gaa aaa gat cta gga tac cag cgg ttt tta gcc aag
                                                                       144
Thr Ile Ile Lys Glu Lys Asp Leu Gly Tyr Gln Arg Phe Leu Ala Lys
         35
aag tgt tta agg ggt aaa acc cac cct ccg tgt ttt act aag cct aaa
                                                                       192
Lys Cys Leu Arg Gly Lys Thr His Pro Pro Cys Phe Thr Lys Pro Lys
                          55
     50
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aag Lys 65	cct Pro	aaa Lys	aga Arg	aaa Lys	ctt Leu 70	ttt Phe	aat Asn	ata Ile	gac Asp	aaa Lys 75	agc Ser	tcc Ser	cac His	tat Tyr	tat Tyr 80	2	240
ggc Gly	aca Thr	agc Ser	gtg Val	gtg Val 85	caa Gln	atg Met	tca Ser	tgg Trp	cta Leu 90	cag Gln	agt Ser	agg Arg	gaa Glu	aaa Lys 95	ttt Phe	2	288
gaa Glu	aac Asn	cat His	tca Ser 100	aaa Lys	tac Tyr	cga Arg	gac Asp	att Ile 105	cct Pro	ttt Phe	gct Ala	gaa Glu	gtc Val 110	agt Ser	ttg Leu	3	336
att Ile	tat Tyr	ggc Gly 115	tat Tyr	aaa Lys	caa Gln	ttt Phe	ttt Phe 120	cct Pro	aaa Lys	aaa Lys	gag Glu	cgc Arg 125	tac Tyr	ggc Gly	ttc Phe	3	384
cgt Arg	ttt Phe 130	tat Tyr	gtc Val	tct Ser	ttg Leu	gat Asp 135	tac Tyr	gct Ala	tat Tyr	GJÀ âââ	ttt Phe 140	ttt Phe	ctt Leu	aaa Lys	aat Asn		432
aag Lys 145	ggc Gly	gtg Val	ttg Leu	ggc Gly	gat Asp 150	agt Ser	ttg Leu	agg Arg	gag Glu	agt Ser 155	tcg Ser	caa Gln	atc Ile	cct Pro	aaa Lys 160	4	480
agc Ser	tat Tyr	aga Arg	gaa Glu	aaa Lys 165	ttg Leu	caa Gln	aga Arg	aaa Lys	gag Glu 170	act Thr	ttt Phe	att Ile	aac Asn	gct Ala 175	att Ile		528
ttt Phe	tat Tyr	ggc Gly	gcg Ala 180	gga Gly	gct Ala	gac Asp	ttt Phe	tta Leu 185	tac Tyr	aaa Lys	cgc Arg	gct Ala	ttt Phe 190	gga Gly	acg Thr	!	576
ctg Leu	att Ile	tta Leu 195	Gly ggg	atg Met	aat Asn	ttc Phe	gtg Val 200	gga Gly	gaa Glu	acc Thr	tgg Trp	ttt Phe 205	tat Tyr	gaa Glu	aca Thr	ı	624
aag Lys	att Ile 210	ttt Phe	aaa Lys	aag Lys	tgg Trp	gct Ala 215	aaa Lys	gat Asp	cct Pro	ttg Leu	agc Ser 220	gtt Val	tat Tyr	cac His	cct Pro	,	672
tac Tyr 225	atg Met	ttt Phe	caa Gln	gtg Val	atg Met 230	ttg Leu	aat Asn	gtg Val	Gly aaa	tat Tyr 235	cgt Arg	tac Tyr	cgc Arg	ttt Phe	tca Ser 240	,	720
agg Arg	tat Tyr	aag Lys	aat Asn	tgg Trp 245	gcg Ala	ata Ile	gaa Glu	ttg Leu	ggt Gly 250	gcg Ala	cgc Arg	atc Ile	cct Pro	ttt Phe 255	tta Leu		768
acc Thr	aat Asn	gat Asp	tat Tyr 260	ttt Phe	aaa Lys	acc Thr	cct Pro	tta Leu 265	Tyr	acc Thr	ctt Leu	cat His	ttc Phe 270	aag Lys	cgc Arg		816
			Val		ctc Leu			Thr					tttt	tta			862
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Lys Cys Leu Arg Gly Lys Thr His Pro Pro Cys Phe Thr Lys Pro Lys
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Lys Pro Lys Arg Lys Leu Phe Asn Ile Asp Lys Ser Ser His Tyr Tyr
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Gly Thr Ser Val Val Gln Met Ser Trp Leu Gln Ser Arg Glu Lys Phe
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Glu Asn His Ser Lys Tyr Arg Asp Ile Pro Phe Ala Glu Val Ser Leu
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                                105
            100
Ile Tyr Gly Tyr Lys Gln Phe Phe Pro Lys Lys Glu Arg Tyr Gly Phe
                                                125
                            120
Arg Phe Tyr Val Ser Leu Asp Tyr Ala Tyr Gly Phe Phe Leu Lys Asn
                                            140
                        135
Lys Gly Val Leu Gly Asp Ser Leu Arg Glu Ser Ser Gln Ile Pro Lys
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                    150
Ser Tyr Arg Glu Lys Leu Gln Arg Lys Glu Thr Phe Ile Asn Ala Ile
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                165
                                    170
Phe Tyr Gly Ala Gly Ala Asp Phe Leu Tyr Lys Arg Ala Phe Gly Thr
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                                185
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Leu Ile Leu Gly Met Asn Phe Val Gly Glu Thr Trp Phe Tyr Glu Thr
                                                205
                            200
Lys Ile Phe Lys Lys Trp Ala Lys Asp Pro Leu Ser Val Tyr His Pro
                                            220
                        215
Tyr Met Phe Gln Val Met Leu Asn Val Gly Tyr Arg Tyr Arg Phe Ser
                                        235
                    230
Arg Tyr Lys Asn Trp Ala Ile Glu Leu Gly Ala Arg Ile Pro Phe Leu
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                                                                      110
                Met Ile Leu Lys Arg Val Thr Glu Ala Leu Glu Ala
tat aaa aat ggc gaa atg ctc att gtt atg gac gat gaa gac aga gaa
                                                                      158
Tyr Lys Asn Gly Glu Met Leu Ile Val Met Asp Asp Glu Asp Arg Glu
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15 20 25

aat Asn	gag Glu 30	ggg Gly	gat Asp	ttg Leu	gtt Val	tta Leu 35	gct Ala	ggg Gly	att Ile	ttt Phe	tct Ser 40	acc Thr	cct Pro	gag Glu	aaa Lys	206
atc Ile 45	aat Asn	ttc Phe	atg Met	gcc Ala	acg Thr 50	cat His	gct Ala	agg Arg	ggg Gly	ttg Leu 55	att Ile	tgc Cys	gtg Val	tct Ser	ttg Leu 60	254
acc Thr	aaa Lys	gat Asp	tta Leu	gcg Ala 65	aaa Lys	aaa Lys	ttt Phe	gaa Glu	tta Leu 70	ccc Pro	cct Pro	atg Met	gtt Val	agc Ser 75	gtg Val	302
aat Asn	gat Asp	tct Ser	aac Asn 80	cat His	gag Glu	acc Thr	gct Ala	ttc Phe 85	acg Thr	gtt Val	tcc Ser	att Ile	gac Asp 90	gct Ala	aaa Lys	350
gaa Glu	gcc Ala	aga Arg 95	acc Thr	ggg Gly	att Ile	tct Ser	gct Ala 100	ttt Phe	gaa Glu	agg Arg	cat His	tta Leu 105	acg Thr	att Ile	gaa Glu	398
tta Leu	ttg Leu 110	tgt Cys	aaa Lys	gac Asp	acc Thr	acc Thr 115	aaa Lys	ccg Pro	agc Ser	gat Asp	ttt Phe 120	gtg Val	cgc Arg	ccg Pro	gly	446
cat His 125	att Ile	ttc Phe	cct Pro	ttg Leu	atc Ile 130	gcc Ala	aaa Lys	gac Asp	ggg	ggc Gly 135	gtg Val	tta Leu	gcg Ala	cgc Arg	acg Thr 140	494
ggc Gly	cat His	act Thr	gaa Glu	gcg Ala 145	agc Ser	gtg Val	gat Asp	ttg Leu	tgc Cys 150	aaa Lys	tta Leu	gct Ala	gga Gly	tta Leu 155	aag Lys	542
ccc Pro	gtg Val	agc Ser	gtg Val 160	att Ile	tgt Cys	gaa Glu	atc Ile	atg Met 165	aaa Lys	gaa Glu	gat Asp	ggc Gly	tct Ser 170	atg Met	gcg Ala	590
aga Arg	agg Arg	ggg Gly 175	gat Asp	aaa Lys	ttt Phe	ttg Leu	agc Ser 180	gat Asp	ttc Phe	gcc Ala	ctc Leu	aaa Lys 185	cat His	aac Asn	ctt Leu	638
aaa Lys	act Thr 190	ctc Leu	tat Tyr	gtc Val	tct Ser	gat Asp 195	ttg Leu	att Ile	agc Ser	tat Tyr	cgt Arg 200	ttg Leu	gaa Glu	aat Asn	gaa Glu	686
agt Ser 205	ttg Leu	ctg Leu	aaa Lys	atg Met	ttt Phe 210	tgt Cys	caa Gln	gaa Glu	gaa Glu	agg Arg 215	gaa Glu	ttt Phe	tta Leu	aaa Lys	cac His 220	734
caa Gln	acg Thr	caa Gln	tgc Cys	tac Tyr 225	act Thr	ttt Phe	tta Leu	gat Asp	cac His 230	cag Gln	caa Gln	aaa Lys	aac Asn	cat His 235	Tyr	782
gct Ala	ttt Phe	aag Lys	ttt Phe 240	Lys	ggc Gly	gca Ala	aaa Lys	acc Thr 245	His	gat Asp	tta Leu	gcc Ala	cct Pro 250	Leu	gtg Val	830
cgt	ttc	cac	cct	atc	aaa	gag	gat	ttt	gat	ttt	tta	acg	act	gat	gcg	878

Arg	Phe	His 255	Pro	Ile	Lys	Glu	Asp 260	Phe	Asp	Phe	Leu	Thr 265	Thr	Asp	Ala	
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tat Tyr 285	ttg Leu	atc Ile	ttt Phe	atg Met	aac Asn 290	acc Thr	cat His	tct Ser	aaa Lys	gaa Glu 295	aac Asn	aat Asn	gtc Val	gtt Val	aaa Lys 300	974
gat Asp	ttt Phe	Gly ggg	atc Ile	ggg Gly 305	gcg Ala	ttg Leu	gtg Val	tta Leu	aaa Lys 310	aat Asn	ttg Leu	ggg Gly	ata Ile	aag Lys 315	gat Asp	1022
ttc Phe	agg Arg	ctc Leu	tta Leu 320	agc Ser	tct Ser	tgt Cys	gaa Glu	gac Asp 325	agg Arg	cag Gln	tat Tyr	aag Lys	gct Ala 330	ttg Leu	agc Ser	1070
GJA aaa	ttt Phe	ggg Gly 335	ctt Leu	aag Lys	ctt Leu	gta Val	gaa Glu 340	acg Thr	att Ile	agc Ser	ctt Leu	taaç	gaggo	ctc		1116
gtt	aagti	ttt a	attga	aatgt	g tt	gta	atgti	t ttt	aagg	gtat	aata	aaact	tct 1	tttta	aa	1172
	<: <:	210> 211> 212> 213>	344 PRT	icoba	acte:	r py	lori									
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1 Glu	Ile	Leu Leu Leu	Lys Ile 20	5 Val	Met	Asp	Asp Ser	Glu 25	10 Asp	Arg	Glu	Asn Ile	Glu 30	15 Gly	Asp	
1 Glu Leu	Ile Met Val Thr	Leu Leu Leu 35	Lys Ile 20 Ala	5 Val Gly	Met Ile	Asp Phe Leu	Asp Ser 40	Glu 25 Thr	10 Asp Pro	Arg Glu	Glu Lys Leu	Asn Ile 45	Glu 30 Asn	15 Gly Phe	Asp Met	
1 Glu Leu Ala	Ile Met Val	Leu Leu Jeu Jeu His	Lys Ile 20 Ala Ala	5 Val Gly Arg	Met Ile Gly Leu	Asp Phe Leu 55	Asp Ser 40 Ile	Glu 25 Thr Cys	10 Asp Pro Val	Arg Glu Ser Ser	Glu Lys Leu 60	Asn Ile 45 Thr	Glu 30 Asn Lys	15 Gly Phe Asp	Asp Met Leu	
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1 Glu Leu Ala Ala 65 His	Ile Met Val Thr 50 Lys	Leu Leu 35 His Lys Thr Ser	Lys Ile 20 Ala Ala Phe Ala Ala 100	5 Val Gly Arg Glu Phe 85 Phe	Met Ile Gly Leu 70 Thr	Asp Phe Leu 55 Pro Val	Asp Ser 40 Ile Pro Ser His	Glu 25 Thr Cys Met Ile Leu 105 Val	10 Asp Pro Val Val Asp 90 Thr	Arg Glu Ser Ser 75 Ala Ile	Glu Lys Leu 60 Val Lys Glu	Asn Ile 45 Thr Asn Glu Leu	Glu 30 Asn Lys Asp Ala Leu 110 Ile	15 Gly Phe Asp Ser Arg 95 Cys	Asp Met Leu Asn 80 Thr	
1 Glu Leu Ala Ala 65 His Gly	Ile Met Val Thr 50 Lys Glu Ile	Leu Leu 35 His Lys Thr Ser Thr 115 Ala	Ile 20 Ala Ala Phe Ala Ala 100 Lys	5 Val Gly Arg Glu Phe 85 Phe	Met Ile Gly Leu 70 Thr Glu Ser	Asp Phe Leu 55 Pro Val Arg	Asp Ser 40 Ile Pro Ser His Phe 120 Val	Glu 25 Thr Cys Met Ile Leu 105 Val	10 Asp Pro Val Val Asp 90 Thr	Arg Glu Ser Ser 75 Ala Ile Pro	Glu Lys Leu 60 Val Lys Glu Gly	Asn Ile 45 Thr Asn Glu Leu His 125	Glu 30 Asn Lys Asp Ala Leu 110 Ile	15 Gly Phe Asp Ser Arg 95 Cys	Asp Met Leu Asn 80 Thr	
1 Glu Leu Ala Ala 65 His Gly Asp Leu Ala 14:	Ile Met Val Thr 50 Lys Glu Ile Thr 130 Ser	Leu Leu 35 His Lys Thr Ser Thr 115 Ala Val	Lys Ile 20 Ala Ala Phe Ala Ala 100 Lys Lys Asp	5 Val Gly Arg Glu Phe 85 Phe Pro Asp	Met Ile Gly Leu 70 Thr Glu Ser Gly Cys 150	Asp Phe Leu 55 Pro Val Arg Asp Gly 135 Lys	Asp Ser 40 Ile Pro Ser His Phe 120 Val Leu	Glu 25 Thr Cys Met Ile Leu 105 Val Leu Ala	10 Asp Pro Val Val Asp 90 Thr Arg Ala Gly	Arg Glu Ser Ser 75 Ala Ile Pro Arg Leu 155	Glu Lys Leu 60 Val Lys Glu Gly Thr 140 Lys	Asn Ile 45 Thr Asn Glu Leu His 125 Gly Pro	Glu 30 Asn Lys Asp Ala Leu 110 Ile His	15 Gly Phe Asp Ser Arg 95 Cys Phe Thr	Asp Met Leu Asn 80 Thr Lys Pro Glu Val 160	
Leu Ala Ala 65 His Gly Asp Leu Ala 145 Ile	Ile Met Val Thr 50 Lys Glu Ile Thr 130 Ser	Leu Leu 35 His Lys Thr Ser Thr 115 Ala Val	Lys Ile 20 Ala Ala Phe Ala Ala 100 Lys Lys Asp Ile	5 Val Gly Arg Glu Phe 85 Phe Pro Asp Leu Met 165	Met Ile Gly Leu 70 Thr Glu Ser Gly Cys 150 Lys	Asp Phe Leu 55 Pro Val Arg Asp Gly 135 Lys	Asp Ser 40 Ile Pro Ser His Phe 120 Val Leu Asp	Glu 25 Thr Cys Met Ile Leu 105 Val Leu Ala	10 Asp Pro Val Val Asp 90 Thr Arg Ala Gly Ser 170	Arg Glu Ser 75 Ala Ile Pro Arg Leu 155 Met	Glu Lys Leu 60 Val Lys Glu Gly Thr 140 Lys	Asn Ile 45 Thr Asn Glu Leu His 125 Gly Pro	Glu 30 Asn Lys Asp Ala Leu 110 Ile His Val	15 Gly Phe Asp Ser Arg 95 Cys Phe Thr Ser Gly 175	Asp Met Leu Asn 80 Thr Lys Pro Glu Val 160 Asp	
Leu Ala Ala 65 His Gly Asp Leu Ly:	Ile Met Val Thr 50 Lys Glu Ile Thr 130 Ser E Cys	Leu Leu 35 His Lys Thr Ser Thr 115 Ala Val Glu Leu	Lys Ile 20 Ala Ala Phe Ala Ala 100 Lys Lys Asp Ile Ser 180	S Val Gly Arg Glu Phe 85 Phe Pro Asp Leu Met 165 Asp	Met Ile Gly Leu 70 Thr Glu Ser Gly Cys 150 Lys	Asp Phe Leu 55 Pro Val Arg Asp Gly 135 Lys Glu Ala	Asp Ser 40 Ile Pro Ser His Phe 120 Val Leu Asp	Glu 25 Thr Cys Met Ile Leu 105 Val Leu Ala Gly Lys 185	10 Asp Pro Val Val Asp 90 Thr Arg Ala Gly Ser 170 His	Arg Glu Ser 75 Ala Ile Pro Arg Leu 155 Met Asn	Glu Lys Leu 60 Val Lys Glu Gly Thr 140 Lys Ala	Asn Ile 45 Thr Asn Glu Leu His 125 Gly Pro Arg	Glu 30 Asn Lys Asp Ala Leu 110 Ile His Val Arg	15 Gly Phe Asp Ser Arg 95 Cys Phe Thr Ser Gly 175 Leu	Asp Met Leu Asn 80 Thr Lys Pro Glu Val 160 Asp	
Leu Ala Ala 65 His Gly Asp Leu Ly:	Ile Met Val Thr 50 Lys Glu Ile Thr 130 Ser E Cys	Leu Leu 35 His Lys Thr Ser Thr 115 Ala Val Glu Leu Asp	Lys Ile 20 Ala Ala Phe Ala Ala 100 Lys Lys Asp Ile Ser 180 Leu	S Val Gly Arg Glu Phe 85 Phe Pro Asp Leu Met 165 Asp Ile	Met Ile Gly Leu 70 Thr Glu Ser Gly Cys 150 Lys Phe	Asp Phe Leu 55 Pro Val Arg Asp Gly 135 Lys Glu Ala	Asp Ser 40 Ile Pro Ser His Phe 120 Val Leu Asp Leu Arg 200	Glu 25 Thr Cys Met Ile Leu 105 Val Leu Ala Gly Lys 185 Leu	10 Asp Pro Val Val Asp 90 Thr Arg Ala Gly Ser 170 His	Arg Glu Ser 75 Ala Ile Pro Arg Leu 155 Met Asn	Glu Lys Leu 60 Val Lys Glu Gly Thr 140 Lys Ala Leu Glu	Asn Ile 45 Thr Asn Glu Leu His 125 Gly Pro Arg Lys Ser 205	Glu 30 Asn Lys Asp Ala Leu 110 Ile His Val Arg Thr 190 Leu	Phe Asp Ser Arg 95 Cys Phe Thr Ser Gly 175 Leu Leu	Asp Met Leu Asn 80 Thr Lys Pro Glu Val 160 Asp	

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Ile Lys Glu Asp Phe Asp Phe Leu Thr Thr Asp Ala Phe Glu Val Phe
                                265
Phe Lys Ala Leu Glu Tyr Leu Lys His Glu Gly Gly Tyr Leu Ile Phe
                                                285
                            280
Met Asn Thr His Ser Lys Glu Asn Asn Val Val Lys Asp Phe Gly Ile
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                        295
Gly Ala Leu Val Leu Lys Asn Leu Gly Ile Lys Asp Phe Arg Leu Leu
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                                        315
Ser Ser Cys Glu Asp Arg Gln Tyr Lys Ala Leu Ser Gly Phe Gly Leu
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Lys Leu Val Glu Thr Ile Ser Leu
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                                                                      104
His Phe Lys Ala Phe His Ala Leu Phe Tyr Pro Ser Asn Arg Asp Asn
         5
atc tat gcc aat cat tta aaa tta ttg gat aat gaa atc agt gaa aaa
                                                                       152
Ile Tyr Ala Asn His Leu Lys Leu Leu Asp Asn Glu Ile Ser Glu Lys
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                         25
gac att ttt aat aaa gcc atc aat caa aaa cga att caa atg gct ctt
                                                                       200
Asp Ile Phe Asn Lys Ala Ile Asn Gln Lys Arg Ile Gln Met Ala Leu
 35
aat ctc atc ttt aag ctt gtt ttt gcc ttt gtt agt aac cac ttc ttc
                                                                       248
Asn Leu Ile Phe Lys Leu Val Phe Ala Phe Val Ser Asn His Phe Phe
                 55
cac gct ttt aga cga cag aat ctc tat aat cgt gtc ttt aat cgc tgt
                                                                       296
His Ala Phe Arg Arg Gln Asn Leu Tyr Asn Arg Val Phe Asn Arg Cys
             70
                                                                       341
gtc ttt aac ctt gac ttc att caa aag ctt ttc att act caa ttc
Val Phe Asn Leu Asp Phe Ile Gln Lys Leu Phe Ile Thr Gln Phe
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                                25
Glu Lys Asp Ile Phe Asn Lys Ala Ile Asn Gln Lys Arg Ile Gln Met
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                            40
                                                45
Ala Leu Asn Leu Ile Phe Lys Leu Val Phe Ala Phe Val Ser Asn His
                        55
Phe Phe His Ala Phe Arg Arg Gln Asn Leu Tyr Asn Arg Val Phe Asn
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                    70
Arg Cys Val Phe Asn Leu Asp Phe Ile Gln Lys Leu Phe Ile Thr Gln
Phe
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                        Gly Glu Asn Ile Leu Phe His Lys Leu Ile
                                                                      159
tta aca tgc ttt tta gcg ctt gta gca ata acc att caa gct tgc ggt
Leu Thr Cys Phe Leu Ala Leu Val Ala Ile Thr Ile Gln Ala Cys Gly
                                                                      207
tat aaa gcc cct cca ttc aat gaa aaa ccc gct aaa aaa act tca aac
Tyr Lys Ala Pro Pro Phe Asn Glu Lys Pro Ala Lys Lys Thr Ser Asn
                                 35
                                                                      255
age tet aat tet tet atg caa aeg eec aec aac age aec aeg eea gaa
Ser Ser Asn Ser Ser Met Gln Thr Pro Thr Asn Ser Thr Thr Pro Glu
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                                                                      310
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Phe Leu Asn Gln Pro
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      <211> 63
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Gln Thr Pro Thr Asn Ser Thr Thr Pro Glu Phe Leu Asn Gln Pro
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Phe Leu Asn Asn Lys His Arg Glu Lys Gly Leu Lys Ala Glu Glu Glu
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                                                                      152
gct tgc gga ttt tta aaa tcg tta ggt ttt gaa atg gtg gag agg aac
Ala Cys Gly Phe Leu Lys Ser Leu Gly Phe Glu Met Val Glu Arg Asn
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Phe Phe Ser Gln Phe Gly Glu Ile Asp Ile Ile Ala Leu Lys Lys Gly
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                                          45
                                                                       248
gtt ttg cat ttc att gaa gtc aaa agc ggg gaa aat ttt gat ccc att
Val Leu His Phe Ile Glu Val Lys Ser Gly Glu Asn Phe Asp Pro Ile
                                      60
tat gcg atc acg ccg agc aaa tta aaa aag atg att aaa acg atc cgc
                                                                       296
Tyr Ala Ile Thr Pro Ser Lys Leu Lys Lys Met Ile Lys Thr Ile Arg
                                  75
tgt tat ttg tcc caa aaa gat ccc aat agc gat ttt tgc ata gac gct
                                                                       344
Cys Tyr Leu Ser Gln Lys Asp Pro Asn Ser Asp Phe Cys Ile Asp Ala
                                                                       392
ctt att gtg aaa aat ggt aaa ttt gag ctt tta gaa aat atc act ttt
Leu Ile Val Lys Asn Gly Lys Phe Glu Leu Leu Glu Asn Ile Thr Phe
                                                                       445
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Lys	Gly 50	Val	Leu	His	Phe	Ile 55	Glu	Val	Lys	Ser	Gly 60	Glu	Asn	Phe	Asp	
Pro 65	Ile	Tyr	Ala	Ile	Thr 70	Pro	Ser	Lys	Leu	Lys 75	Lys	Met	Ile	Lys	Thr 80	
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Thr	Phe															
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aat Asn 10	ttt Phe	ttt Phe	agc Ser	tcc Ser	aat Asn 15	cat His	gat Asp	ttt Phe	atc Ile	acc Thr 20	Gly ggg	ttt Phe	ttt Phe	gtc Val	gtt Val 25	160
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atg Met	cag Gln	atg Met	gta Val 45	cct Pro	atg Met	ggt Gly	ttg Leu	cag Gln 50	Asn	gtg Val	tat Tyr	gag Glu	agc Ser 55	Ile	att Ile	256
ago Ser	gcg Ala	att Ile 60	ttg Leu	agc Ser	gtg Val	gct Ala	aag Lys 65	Asp	att Ile	ata Ile	ggc	gaa Glu 70	Glu	tta Leu	gcc Ala	304
cgc Arg	aaa Lys 75	tac Tyr	ttc Phe	ccc Pro	cta Leu	gct Ala 80	ggc Gly	acg Thr	atc Ile	gct Ala	ttg Leu 85	Tyr	gtc Val	ttt Phe	ttt Phe	352
tct Ser 90	aac Asn	atg Met	ata Ile	ggc Gly	atc Ile 95	att Ile	cct Pro	ggc Gly	ttt Phe	gaa Glu 100	Ser	cct	acg Thr	gct Ala	agc Ser 105	400
tgg Trg	g agc Ser	ttt Phe	acg Thr	ctg Leu 110	. Val	tta Leu	gcg Ala	ctg Leu	att Ile 115	Val	ttt Phe	ttt Phe	tat Tyr	tac Tyr 120	His	448

ttt gaa Phe Glu	ggc	att Ile 125	aga Arg	gtg Val	cag Gln	ggc Gly	ttt Phe 130	ttt Phe	aag Lys	tat Tyr	ttc Phe	gct Ala 135	cat His	ttt Phe	496
gca ggt Ala Gly	cct Pro 140	gtg Val	aaa Lys	tgg Trp	ctc Leu	gcc Ala 145	cct Pro	ttc Phe	atg Met	ttc Phe	cct Pro 150	att Ile	gag Glu	atc Ile	544
atc tcg Ile Ser 155	cat His	ttt Phe	tct Ser	agg Arg	atc Ile 160	gtg Val	tct Ser	tta Leu	tcg Ser	ttt Phe 165	cgt Arg	ttg Leu	ttt Phe	Gl ^A aaa	592
aat atc Asn Ile 170	aag Lys	ggc Gly	gat Asp	gac Asp 175	atg Met	ttc Phe	ttg Leu	ctc Leu	atc Ile 180	atg Met	ctt Leu	tta Leu	tta Leu	gtg Val 185	640
cct tgg Pro Trp	gcg Ala	gtt Val	cct Pro 190	gta Val	gcg Ala	cct Pro	ttt Phe	atg Met 195	gtg Val	ttg Leu	ttt Phe	ttc Phe	atg Met 200	Gly aaa	688
att tta Ile Leu	caa Gln	gct Ala 205	ttt Phe	gtt Val	ttt Phe	atg Met	atc Ile 210	ctc Leu	act Thr	tat Tyr	gtg Val	tat Tyr 215	ttg Leu	gca Ala	736
ggg gct Gly Ala	gtt Val 220	tta Leu	acc Thr	gat Asp	gaa Glu	ggg Gly 225	cat His	taag	gcaat	caa (catto	cttg	ct.		783
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Met Glu 1 Asp Phe Leu Ile Leu Gln 50 Lys Asp	211> 212> 213> 400> His Ile Ser 35 Asn	226 PRT Hel: 64 Arg Thr 20 Leu Val	Val 5 Gly Gly Tyr	Phe Phe Ala Glu	Thr Phe Ser Ser 55	Ile Val Arg 40 Ile	Val 25 Lys Ile	10 Leu Met Ser	Thr Gln Ala	Ala Met Ile	Val Val 45 Leu	Leu 30 Pro Ser	15 Met Met Val	Phe Gly Ala	
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Met Glu 1 Asp Phe Leu Ile Leu Gln 50 Lys Asp 65 Gly Thr	211> 212> 213> 400> His Ile Ser 35 Asn Ile Ile Phe	226 PRT Hel: 64 Arg Thr 20 Leu Val Ile Ala Glu 100 Val	Val 5 Gly Gly Tyr Gly Leu 85 Ser	Phe Phe Ala Glu Glu 70 Tyr Pro	Thr Phe Ser Ser 55 Glu Val Thr	Ile Val Arg 40 Ile Leu Phe Ala	Val 25 Lys Ile Ala Phe Ser 105 His	10 Leu Met Ser Arg Ser 90 Trp	Thr Gln Ala Lys 75 Asn Ser	Ala Met Ile 60 Tyr Met	Val Val 45 Leu Phe Ile Thr	Leu 30 Pro Ser Pro Gly Leu 110 Arg	15 Met Val Leu Ile 95 Val	Phe Gly Ala Ala 80 Ile Leu	
Met Glu 1 Asp Phe Leu Ile Leu Gln 50 Lys Asp 65 Gly Thr Pro Gly Ala Leu Gly Phe	211> 212> 213> 400> His Ile Ser 35 Asn Ile Ile Phe Ile 115	226 PRT Hel: 64 Arg Thr 20 Leu Val Ile Ala Glu 100 Val	Val 5 Gly Gly Tyr Gly Leu 85 Ser	Phe Phe Ala Glu Glu 70 Tyr Pro	Thr Phe Ser Ser 55 Glu Val Thr Tyr	Ile Val Arg 40 Ile Leu Phe Ala Tyr 120 His	Val 25 Lys Ile Ala Phe Ser 105 His	10 Leu Met Ser Arg Ser 90 Trp	Thr Gln Ala Lys 75 Asn Ser Glu	Ala Met Ile 60 Tyr Met Phe Gly	Val Val 45 Leu Phe Ile Thr Ile 125 Val	Leu 30 Pro Ser Pro Gly Leu 110 Arg	15 Met Wal Leu Ile 95 Val	Phe Gly Ala Ala 80 Ile Leu Gln	
Met Glu 1 Asp Phe Leu Ile Leu Gln 50 Lys Asp 65 Gly Thr Pro Gly Ala Leu Gly Phe 130 Ala Pro	211> 212> 213> 400> His Ile Ser 35 Asn Ile Ile Phe Ile 115 Phe	226 PRT Hel: 64 Arg Thr 20 Leu Val Ile Ala Glu 100 Val Lys	Val 5 Gly Gly Tyr Gly Leu 85 Ser Phe	Phe Phe Ala Glu Glu 70 Tyr Pro Phe Phe	Thr Phe Ser Ser 55 Glu Val Thr Tyr Alaa 135 Ile	Ile Val Arg 40 Ile Leu Phe Ala Tyr 120 His	Val 25 Lys Ile Ala Phe Ser 105 His	10 Leu Met Ser Arg Ser 90 Trp Phe	Thr Gln Ala Lys 75 Asn Ser Glu Gly Ser	Ala Met Ile 60 Tyr Met Phe Gly Pro 140 His	Val Val 45 Leu Phe Ile Thr Ile 125 Val	Leu 30 Pro Ser Pro Gly Leu 110 Arg	15 Met Val Leu Ile 95 Val Val	Phe Gly Ala Ala 80 Ile Leu Gln Leu Ile	
Met Glu 1 Asp Phe Leu Ile Leu Gln 50 Lys Asp 65 Gly Thr Pro Gly Ala Leu Gly Phe 130	211> 212> 213> 400> His Ile Ser 35 Asn Ile Ile Phe Ile 115 Phe	226 PRT Hel: 64 Arg Thr 20 Leu Val Ile Ala Glu 100 Val Lys Met	Val 5 Gly Gly Tyr Gly Leu 85 Ser Phe Tyr	Phe Phe Ala Glu Glu 70 Tyr Pro Phe Phe Pro 150 Arg	Thr Phe Ser Ser 55 Glu Val Thr Tyr Ala 135 Ile	Ile Val Arg 40 Ile Leu Phe Ala Tyr 120 His	Val 25 Lys Ile Ala Phe Ser 105 His Phe	10 Leu Met Ser Arg Ser 90 Trp Phe Ala Ile	Thr Gln Ala Lys 75 Asn Ser Glu Gly Ser 155 Ile	Ala Met Ile 60 Tyr Met Phe Gly Pro 140 His	Val Val 45 Leu Phe Ile Thr Ile 125 Val	Leu 30 Pro Ser Pro Gly Leu 110 Arg Lys	15 Met Val Leu Ile 95 Val Val Trp	Phe Gly Ala Ala 80 Ile Leu Gln Leu Ile 160 Met	

Pro	Phe :	Met	180 Val	Leu	Phe	Phe		185 Gly	Ile	Leu	Gln	Ala	190 Phe	Val	Phe	
Gly	Ile 210	195 Leu	Thr	Tyr		Tyr 215	200 Leu	Ala	Gly	Ala	Val 220	205 Leu	Thr	Asp	Glu	
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gtt Val	tta Leu 20	ttg Leu	ctc Leu	gtg Val	agc Ser	ggt Gly 25	tct Ser	att Ile	gca Ala	gcg Ala	tat Tyr 30	aaa Lys	tcc Ser	cta Leu	gaa Glu	152
tta Leu 35	gtg Val	cgc Arg	ttg Leu	ttg Leu	ttt Phe 40	aaa Lys	agc Ser	ggg	gct Ala	agt Ser 45	lle	caa Gln	gtg Val	gtg Val	atg Met 50	200
agt Ser	aag Lys	ggt Gly	gcg Ala	aaa Lys 55	aaa Lys	ttc Phe	atc Ile	aaa Lys	ccc Pro 60	Leu	agt Ser	ttt Phe	gaa Glu	gct Ala 65	ttg Leu	248
agc Ser	cac His	cat His	aaa Lys 70	Val	ttg Leu	cat His	gat Asp	cgt Arg 75	Asn	gaa Glu	aaa Lys	tgg Trp	tat Tyr 80	Tyr	aac Asn	296
cac His	caa Gln	aac Asn 85	Ala	tta Leu	cac His	cat His	aac Asn 90	His	atc Ile	gca Ala	tgc Cys	gct Ala 95	Ala	aat Asn	gct Ala	344
gat Asp	ttg Leu 100	ctc Leu	atc Ile	ttt Phe	gcc Ala	cct Pro 105	Leu	agc Ser	act Thr	aac Asn	ago Ser 110	Leu	tct Ser	aaa Lys	atc Ile	392
gct Ala 115	cac His	gct Ala	tta Leu	gcg Ala	gat Asp 120	aat Asn	ato Ile	gta Val	agc Ser	gcg Ala 125	Thr	ttt Phe	tta Leu	gct Ala	tgc Cys 130	440
gct Ala	tcc Ser	cct Pro	aaa Lys	atc Ile 135	Leu	gcc Ala	cct Pro	ago Ser	ato Met	: Asr	c act n Thr	aac Asr	atg Met	cto Leu 145	aat Asn	488
tcc	c cct	ato	act	caa	agt	aat	tta	a aaa	a cgo	ttg	g aaa	a gat	tcc	aac	cac	536

	Pro	Ile	Thr 150	Gln	Ser	Asn	Leu	Lys 155	Arg	Leu	Lys	Asp	Ser 160	Asn	His	
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gat Asp	ggg Gly 180	gcg Ala	atg Met	gct Ala	gag Glu	cct Pro 185	tta Leu	gaa Glu	atc Ile	ctt Leu	ttt Phe 190	aaa Lys	gcc Ala	gct Ala	caa Gln	632
acg Thr 195	ctc Leu	cta Leu	aaa Lys	gac Asp	gct Ala 200	tat Tyr	ttt Phe	gaa Glu	aac Asn	aga Arg 205	gaa Glu	gtc Val	ata Ile	gtc Val	atg Met 210	680
ggc Gly	ggc Gly	gcg Ala	agt Ser	ata Ile 215	gaa Glu	aag Lys	att Ile	gac Asp	agc Ser 220	gtt Val	cga Arg	acg Thr	att Ile	agc Ser 225	aat Asn	728
	ttc Phe	tago	cggga	att o	caago	cgago	eg et	ttag	gcttt	ggd	cgtta	atat	ttta	aagg	gag	784
cca																787
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1	Asn	Phe	Leu Leu	Glu 5 Leu				Gly	10				Tyr	15		
1 Lys	Asn Arg	Phe Val Leu	Leu Leu 20	5	Leu	Val	Ser	Gly 25	10 Ser	Ile	Ala	Ala	Tyr 30	15 Lys	Ser	
1 Lys Leu	Asn Arg Glu Met	Phe Val Leu 35	Leu Leu 20 Val	5 Leu Arg	Leu Leu	Val Leu Lys	Ser Phe 40	Gly 25 Lys	10 Ser Ser	Ile Gly	Ala Ala Pro	Ala Ser 45	Tyr 30 Ile	15 Lys Gln	Ser	
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1 Lys Leu Val Ala 65	Asn Arg Glu Met 50 Leu	Phe Val Leu 35 Ser Ser	Leu 20 Val Lys His	5 Leu Arg Gly His Asn	Leu Leu Ala Lys 70	Val Leu Lys 55 Val	Ser Phe 40 Lys Leu	Gly 25 Lys Phe His	10 Ser Ser Ile Asp	Ile Gly Lys Arg 75	Ala Ala Pro 60 Asn	Ala Ser 45 Leu Glu	Tyr 30 Ile Ser Lys	15 Lys Gln Phe Trp	Ser Val Glu	
1 Lys Leu Val Ala 65 Tyr	Asn Arg Glu Met 50 Leu Asn	Phe Val Leu 35 Ser Ser	Leu 20 Val Lys His Gln Leu	5 Leu Arg Gly His	Leu Leu Ala Lys 70 Ala	Val Leu Lys 55 Val Leu	Ser Phe 40 Lys Leu His	Gly 25 Lys Phe His	10 Ser Ser Ile Asp Asn 90	Ile Gly Lys Arg 75 His	Ala Ala Pro 60 Asn Ile	Ala Ser 45 Leu Glu Ala	Tyr 30 Ile Ser Lys Cys Ser	15 Lys Gln Phe Trp Ala 95 Leu	Ser Val Glu Tyr 80 Ala	
1 Lys Leu Val Ala 65 Tyr Asn	Asn Arg Glu Met 50 Leu Asn Ala	Phe Val Leu 35 Ser Ser His Asp	Leu 20 Val Lys His Gln Leu 100	5 Leu Arg Gly His Asn 85 Leu	Leu Ala Lys 70 Ala Ile	Val Leu Lys 55 Val Leu Phe	Ser Phe 40 Lys Leu His Ala Asp	Gly 25 Lys Phe His His Pro 105 Asn	10 Ser Ser Ile Asp Asn 90 Leu	Ile Gly Lys Arg 75 His Ser	Ala Ala Pro 60 Asn Ile Thr	Ala Ser 45 Leu Glu Ala Asn	Tyr 30 Ile Ser Lys Cys Ser 110 Thr	15 Lys Gln Phe Trp Ala 95 Leu	Ser Val Glu Tyr 80 Ala	
1 Lys Leu Val Ala 65 Tyr Asn Lys	Asn Arg Glu Met 50 Leu Asn Ala Ile Cys	Phe Val Leu 35 Ser Ser His Asp Ala 115 Ala	Leu 20 Val Lys His Gln Leu 100 His	5 Leu Arg Gly His Asn 85 Leu Ala	Leu Ala Lys 70 Ala Ile Leu	Val Leu Lys 55 Val Leu Phe Ala Ile	Ser Phe 40 Lys Leu His Ala Asp 120	Gly 25 Lys Phe His His Pro 105 Asn	10 Ser Ser Ile Asp Asn 90 Leu Ile	Ile Gly Lys Arg 75 His Ser Val	Ala Ala Pro 60 Asn Ile Thr Ser Met	Ala Ser 45 Leu Glu Ala Asn Ala 125	Tyr 30 Ile Ser Lys Cys Ser 110 Thr	15 Lys Gln Phe Trp Ala 95 Leu Phe	Ser Val Glu Tyr 80 Ala Ser	
1 Lys Leu Val Ala 65 Tyr Asn Lys Ala	Asn Arg Glu Met 50 Leu Asn Ala Ile Cys 130 Asn	Phe Val Leu 35 Ser Ser His Asp Ala 115 Ala	Leu 20 Val Lys His Gln Leu 100 His	5 Leu Arg Gly His Asn 85 Leu Ala	Leu Ala Lys 70 Ala Ile Leu Lys Thr	Val Leu Lys 55 Val Leu Phe Ala Ile 135 Gln	Phe 40 Lys Leu His Ala Asp 120 Leu	Gly 25 Lys Phe His His Pro 105 Asn	10 Ser Ser Ile Asp Asn 90 Leu Ile Pro	Ile Gly Lys Arg 75 His Ser Val Ser Lys	Ala Ala Pro 60 Asn Ile Thr Ser Met 140 Arg	Ala Ser 45 Leu Glu Ala Asn Ala 125 Asn	Tyr 30 Ile Ser Lys Cys Ser 110 Thr	15 Lys Gln Phe Trp Ala 95 Leu Phe	Ser Val Glu Tyr 80 Ala Ser Leu Met Ser	
1 Lys Leu Val Ala 65 Tyr Asn Lys Ala Leu 145	Asn Arg Glu Met 50 Leu Asn Ala Ile Cys 130 Asn	Phe Val Leu 35 Ser Ser His Asp Ala 115 Ala Ser	Leu 20 Val Lys His Gln Leu 100 His Ser	5 Leu Arg Gly His Asn 85 Leu Ala Pro Ile	Leu Ala Lys 70 Ala Ile Leu Lys Thr 150	Val Leu Lys 55 Val Leu Phe Ala Ile 135 Gln	Ser Phe 40 Lys Leu His Ala Asp 120 Leu Ser	Gly 25 Lys Phe His His Pro 105 Asn Ala	10 Ser Ser Ile Asp Asn 90 Leu Ile Pro Leu Ala	Ile Gly Lys Arg 75 His Ser Val Ser Lys 155	Ala Ala Pro 60 Asn Ile Thr Ser Met 140 Arg	Ala Ser 45 Leu Glu Ala Asn Ala 125 Asn Leu	Tyr 30 Ile Ser Lys Cys Ser 110 Thr	15 Lys Gln Phe Trp Ala 95 Leu Phe Asn Asp	Ser Val Glu Tyr 80 Ala Ser Leu Met Ser 160 Thr	
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Leu Val Ala 65 Tyr Asn Lys Ala Leu 145 Asn Lys	Asn Arg Glu Met 50 Leu Asn Ala Ile Cys 130 Asn His Gly	Phe Val Leu 35 Ser Ser His Asp Ala 115 Ala Ser Ile Asp	Leu 20 Val Lys His Gln Leu 100 His Ser Pro Ile Gly 180 Leu	5 Leu Arg Gly His Asn 85 Leu Ala Pro Ile Leu 165 Ala	Leu Ala Lys 70 Ala Ile Leu Lys Thr 150 Asp	Val Leu Lys 55 Val Leu Phe Ala Ile 135 Gln Thr	Phe 40 Lys Leu His Ala Asp 120 Leu Ser Lys Glu	Gly 25 Lys Phe His Pro 105 Asn Ala Asn Pro 185 Tyr	Ser Ser Ile Asp Asn 90 Leu Ile Pro Leu Ala 170 Leu	Ile Gly Lys Arg 75 His Ser Val Ser Lys 155 Leu Glu	Ala Ala Pro 60 Asn Ile Thr Ser Met 140 Arg Leu Ile	Ala Ser 45 Leu Glu Ala Asn Ala 125 Asn Leu Ala Leu	Tyr 30 Ile Ser Lys Cys Ser 110 Thr Thr Lys Cys Phe 190 Glu	15 Lys Gln Phe Trp Ala 95 Leu Phe Asn Asp 175 Lys	Ser Val Glu Tyr 80 Ala Ser Leu Met Ser 160 Thr	

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gag Glu	att Ile 15	aca Thr	gga Gly	ccg Pro	att Ile	aag Lys 20	cct Pro	act Thr	gaa Glu	gtg Val	tat Tyr 25	gat Asp	aaa Lys	gcc Ala	aaa Lys	15	7
gag Glu 30	ctt Leu	ttt Phe	gaa Glu	aaa Lys	ggt Gly 35	gag Glu	att Ile	aca Thr	aac Asn	atg Met 40	ttt Phe	gat Asp	tgt Cys	ggg Gly	ggc Gly 45	20	5
aaa Lys	acc Thr	ccg Pro	cac His	cag Gln 50	agc Ser	gtt Val	agt Ser	tct Ser	tat Tyr 55	att Ile	tat Tyr	aca Thr	gcc Ala	tta Leu 60	aac Asn	25	3
aag Lys	ggc Gly	gaa Glu	gaa Glu 65	ctg Leu	cct Pro	ttt Phe	aaa Lys	aaa Lys 70	gtg Val	caa Gln	gaa Glu	aac Asn	cca Pro 75	acc Thr	tta Leu	30	1
atc Ile	gct Ala	tta Leu 80	aaa Lys	gac Asp	gcg Ala	gct Ala	aaa Lys 85	gag Glu	cta Leu	ggt Gly	tta Leu	gac Asp 90	gct Ala	caa Gln	aaa Lys	34	9
ata Ile	agc Ser 95	gct Ala	cca Pro	agc Ser	tct Ser	aaa Lys 100	atc Ile	gcg Ala	cat His	gaa Glu	agg Arg 105	gat Asp	ttg Leu	cac His	ccc Pro	39	7
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aaa Lys	acc Thr	att Ile	ttt Phe	cat His 130	gaa Glu	gag Glu	agt Ser	tca Ser	aaa Lys 135	tca Ser	ata Ile	aaa Lys	ggc Gly	atg Met 140	gac Asp	49	3
agg Arg	tgg Trp	ctt Leu	tat Tyr 145	Pro	gac Asp	atg Met	gtg Val	ggg Gly 150	Val	agg Arg	ttt Phe	ttg Leu	cac His 155	gct Ala	gaa Glu	54	1،
tta Leu	tct Ser	aat Asn 160	Glu	aat Asn	tta Leu	atc Ile	gct Ala 165	Phe	tct Ser	aag Lys	aaa Lys	ttt Phe 170	gac Asp	act Thr	tta Leu	58	}9
ccc	att	aaa	ctg	gtg	agc	ttt	gaa	. ttg	aaa	aaa	gaa	atc	agc	gtg	cat	63	37

Pro	Ile 175	Lys	Leu	Val	Ser	Phe 180	Glu	Leu	Lys	Lys	Glu 185	Ile	Ser	Val	His	
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ctc Leu	atg Met	gat Asp	ttg Leu 225	ttg Leu	aag Lys	cgt Arg	ttg Leu	cat His 230	gcg Ala	agt Ser	ttt Phe	Gly ggg	att Ile 235	ggc Gly	gtg Val	781
att Ile	gat Asp	tta Leu 240	aga Arg	act Thr	aat Asn	gag Glu	gat Asp 245	aaa Lys	agc Ser	gct Ala	att Ile	tta Leu 250	ttg Leu	aac Asn	gct Ala	829
aaa Lys	tac Tyr 255	aaa Lys	gaa Glu	aag Lys	att Ile	gat Asp 260	tac Tyr	acc Thr	gtg Val	gct Ala	tca Ser 265	gag Glu	ctt Leu	agc Ser	gcg Ala	877
aaa Lys 270	aat Asn	gaa Glu	aaa Lys	ttc Phe	agc Ser 275	ggt Gly	ttt Phe	tta Leu	aag Lys	agc Ser 280	gtt Val	gtg Val	gat Asp	tat Tyr	gac Asp 285	925
cca Pro	aac Asn	cac His	cca Pro	caa Gln 290	cgc Arg	tat Tyr	aaa Lys	gat Asp	gaa Glu 295	ttt Phe	gat Asp	gag Glu	gtt Val	aaa Lys 300	aag Lys	973
aaa Lys	gag Glu	gag Glu	tta Leu 305	tac Tyr	cct Pro	aac Asn	cca Pro	tcg Ser 310	ctt Leu	tct Ser	ttt Phe	taa	aaat	gag		1019
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1 Gly	Pro	Ile		5 Pro	Thr	Glu	Val		10 Asp	Lys	Ala	Lys	Glu 30	15 Leu	Phe	
Glu	Lys		20 Glu	Ile	Thr	Asn	Met	25 Phe	Asp	Cys	Gly	Gly 45		Thr	Pro	
His	Gln 50	35 Ser	Val	Ser	Ser	Tyr 55		Tyr	Thr	Ala	Leu 60		Lys	Gly	Glu	
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GIY	20 30	vaı	ьeu	Leu	Gln	ser 35	Thr	Trp	Pne	Leu	40	Lys	ьeu	ALA	Ala		
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					atc Ile											374	۵
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					aac Asn											614	E
125		V 44.2	0.2.7	11011	130				2110	135		5			140		
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Asn Tyr Phe Ala Glu Val Glu Gln Ala Ala Phe Ser Pro Ala Asn Val
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Val Pro Gly Ile Gly Tyr Ser Pro Asp Arg Met Leu Gln Gly Arg Leu
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Phe Ser Tyr Gly Asp Thr His Arg Tyr Arg Leu Gly Val Asn Tyr Pro
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           340
Gln Ile Pro Val Asn Lys Pro Arg Cys Pro Phe His Ser Ser Ser Arg
                           360
                                                365
Asp Gly Tyr Met Gln Asn Gly Tyr Tyr Gly Ser Leu Gln Asn Tyr Thr
                                            380
                        375
Pro Ser Ser Leu Pro Gly Tyr Lys Glu Asp Lys Ser Ala Arg Asp Pro
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                                        395
Lys Phe Asn Leu Ala His Ile Glu Lys Glu Phe Glu Val Trp Asn Trp
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                                   410
Asp Tyr Arg Ala Asp Asp Ser Asp Tyr Tyr Thr Gln Pro Gly Asp Tyr
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Tyr Arg Ser Leu Pro Ala Asp Glu Lys Glu Arg Leu His Asp Thr Ile
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                            440
                                                445
Gly Glu Ser Leu Ala His Val Thr His Lys Glu Ile Val Asp Lys Gln
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                                           460
Leu Glu His Phe Lys Lys Ala Asp Pro Lys Tyr Ala Glu Gly Val Lys
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Lys Ala Leu Glu Lys His Gln Lys Met Met Lys Asp Met His Gly Lys
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Asp Met His His Thr Lys Lys Lys
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                                                                     104
Asn Gly Phe Val Asn Ile Asn Asn Glu Lys Met Ser Lys Ser Leu Gly
                             10
aat agc ttt ttt gtt aaa gac gct ctc aaa aac tat gat ggc gaa att
                                                                     152
Asn Ser Phe Phe Val Lys Asp Ala Leu Lys Asn Tyr Asp Gly Glu Ile
                         25
    20
ttg cgc aat tac tta cta ggg gtg cat tat cgc tct gtt ttg aat ttc
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Leu Arg Asn Tyr Leu Leu Gly Val His Tyr Arg Ser Val Leu Asn Phe
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cgt tta aaa Arg Leu Lys												:	296
ttt aaa aaa Phe Lys Lys 85	Glu Ile											:	344
aaa gcg ttg Lys Ala Leu 100		_	Ser	-						-		:	392
ttg gat caa Leu Asp Glr 115			_	_		_		-					440
aat ttg aaa Asn Leu Lys		Glu Glu	_							-			488
agc gcc tat Ser Ala Tyr												!	536
gaa aac aag Glu Asn Lys 165	Ile Glu											!	584
tta aaa gcc Leu Lys Ala 180			Glu,									1	632
ttg atg gac Leu Met Asp 195												ı	674
taaacacctc	caatttta	cc ttttt	acaca	ı .ttc	tago	caac	aact	ttca	agc a	att		•	727
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35 Asn Phe Asn			40					45					
50 Ile Tyr Arg	Leu Lvs	55 Gln Arg	Val	Leu	Glv	Thr	60 Leu	Glv	Glv	Ile	Asn		
65 Pro Asn Phe	_	70			_	75		_	_		80		
IIO ABII FIIG	тур шур	014 11C	Jeu	JIU	Cys	1100	0.111	779D	٦٥٢٠	Leu	1 77211		

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Asp Pro Ser Ala Tyr Phe Gln Leu Gly Val Ser Glu Ser Glu Lys Gln
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Glu Ile Glu Asn Lys Ile Glu Glu Arg Lys Arg Ala Lys Glu Arg Lys
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Asp Phe Leu Lys Ala Asp Ser Ile Arg Glu Glu Leu Leu Lys Gln Lys
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ctt gtt aaa aac ggg ttt gat tta aag ctt ttg tat aaa gtg gtt gga
Leu Val Lys Asn Gly Phe Asp Leu Lys Leu Leu Tyr Lys Val Val Gly
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aat tta gcc aca gag caa ccc cta gct ccc aaa tac aaa gac cac cca
                                                                       203
Asn Leu Ala Thr Glu Gln Pro Leu Ala Pro Lys Tyr Lys Asp His Pro
                              40
         35
                                                                       251
ctc aaa ggc ggt tta aaa gat ttt agg gaa tgc cac tta aaa ccg gat
Leu Lys Gly Gly Leu Lys Asp Phe Arg Glu Cys His Leu Lys Pro Asp
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                          55
tta ttg ctt gtc tat caa att aaa aaa caa gaa aac acc ctc ttt tta
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Leu Leu Leu Val Tyr Gln Ile Lys Lys Gln Glu Asn Thr Leu Phe Leu
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 65
 gta agg tta ggc agt cat agc gag ctg ttt tgaaccgccc acacccctta
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Val Arg Leu Gly Ser His Ser Glu Leu Phe
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Leu Lys Gly Gly Leu Lys Asp Phe Arg Glu Cys His Leu Lys Pro Asp
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                                                                       110
                    Val Leu Lys Leu Asn Leu Lys Lys Ser Phe Gln
                                                                       158
aaa gat ttt gat aaa ttg ctt ttg aat ggg ttt gat gat agc gtt ttg
Lys Asp Phe Asp Lys Leu Leu Leu Asn Gly Phe Asp Asp Ser Val Leu
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 aat gaa gtc att cta acc tta aga aaa aaa gaa ccg cta gat cca caa
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Asn Glu Val Ile Leu Thr Leu Arg Lys Lys Glu Pro Leu Asp Pro Gln
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 ttt caa gat cat gcc tta aag gga aag tgg aaa cct ttt agg gaa tgc
                                                                       254
 Phe Gln Asp His Ala Leu Lys Gly Lys Trp Lys Pro Phe Arg Glu Cys
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      45
 cac att aag cct gat gtt ttg ctt gtg tat tta gtg aaa gat gat gaa
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 His Ile Lys Pro Asp Val Leu Leu Val Tyr Leu Val Lys Asp Asp Glu
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                      65
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 ctg att ttg tta agg tta ggc agt cat agc gag ctg ttt taatccaccc
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 Leu Ile Leu Leu Arg Leu Gly Ser His Ser Glu Leu Phe
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Thr	Leu	Arg 35		Lys	Glu	Pro	Leu 40		Pro	Gln	Phe	Gln 45		His	Ala	
Leu	Lys 50	Gly	Lys	Trp	Lys	Pro 55	Phe	Arg	Glu	Cys	His 60	Ile	Lys	Pro	Asp	
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Leu	Gly	Ser	His	Ser 85	Glu	Leu	Phe									
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~+ ~		100>		-+				~ +-+-1	-++		+ - + -	·~++	- 00	+ + + ~ .	70+++0	60
		ita (atg (ggttta caa Gln	116
		tgg Trp 5														164
		ctt Leu														212
		ccc Pro														260
		cct Pro														308
		gcg Ala	-		_		-					-	-			356
		tat Tyr 85														404
	_	gcg Ala	-	_					_							452
		gcc Ala	_				_		-		_	-			_	500

_	ttg Leu	_		_		-	_								-	548
	cct Pro															596
	ttt Phe															644
-	ctg Leu 180		_	_		_										692
	gcc Ala					_	-		_	_			_			740
	gtg Val												tgaa	aagci	tgc	789
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215

220

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735 gac aaa tac gca aga ggc atg gca gag cct ggc ttt aac gct aga ttt Asp Lys Tyr Ala Arg Gly Met Ala Glu Pro Gly Phe Asn Ala Arg Phe

783 gaa att tcc tat aag ttt taataatgga tctaaaaaata aggatttcat Glu Ile Ser Tyr Lys Phe

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821

687

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Asn Gly Pro Thr Asp Ile Asp Arg Arg Pro Ser Asn Cys Pro Lys Thr 135 140 Pro Gly Ile Phe His Val His Lys Pro Gly Tyr Gly Val Ser Ser Phe

155 150 Phe Val Thr Tyr Lys Pro Thr Tyr Lys Lys Leu Lys Gly Leu Ser Leu

165 170 Asn Ala Val Phe Asn Asn Val Phe Asn Gln Gln Tyr Ile Asp Gln Ala

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Gly Met Ala Glu Pro Gly Phe Asn Ala Arg Phe Glu Ile Ser Tyr Lys 215 210

Phe 225

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731

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Lys Ile Leu Ser Leu Asn Tyr His His Asn Lys Ile Lys Leu Gly His
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His Phe Tyr Arg Gln Lys Ile Pro Leu Cys Val Glu Ser Asn Gly Ser
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1 Thr Lys Val Ile 65	Gly Ala Cys Cys 50	400> Phe Pro Tyr 35 Leu	98 Ala Ser 20 Ala Lys Leu	Asp 5 Lys Leu Cys Cys	Phe Glu Met His Asp	Phe Glu Tyr Tyr 55 Val	Lys Gln His 40 His Gly	Pro 25 Lys Phe Ser	10 Ser Glu Arg Phe	His Val Met Glu 75	Trp Phe Lys 60 Glu	Val Ser 45 Ala Phe	Lys 30 Lys Ala Asp	15 Cys Tyr Glu Lys	Pro Ser Arg His	
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aga gaa atg Arg Glu Met	gag cgc ttg Glu Arg Leu 75	ttt ttt tgg Phe Phe Trj 8	o Gln Arg	ttt tgc gct Phe Cys Ala 85	a Leu Leu
ttt agg cat Phe Arg His 90	tta gaa ggc Leu Glu Gly	gtg cat to Val His Se 95	t tta gat r Leu Asp	agc gtc tat Ser Val Ty 100	t ttt gac 403 c Phe Asp
act tta gat Thr Leu Asp 105	gat ggg gct Asp Gly Ala	aac aaa cto Asn Lys Leo 110	c gcc aaa u Ala Lys	cag cac ccc Gln His Pro 115	c tta aga 451 o Leu Arg
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gct Ala	aaa Lys	agc Ser 170	cta Leu	aat Asn	tta Leu	gaa Glu	aaa Lys 175	atc Ile	caa Gln	gct Ala	ttt Phe	ttt Phe 180	cgc Arg	act Thr	caa Gln	643
agc Ser	acg Thr 185	att Ile	gat Asp	tta Leu	gaa Glu	aca Thr 190	gaa Glu	gaa Glu	gta Val	gaa Glu	gaa Glu 195	tta Leu	tgg Trp	cgc Arg	acg Thr	691
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Leu	Asp	Ser	Val	85 Tyr	Phe	Asp	Thr	Leu	90 Asp	Asp	Gly	Ala	Asn	95 Lys	Leu	
			100					105					110		Leu	
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agt ta Ser T	at tac yr Ty: 75	c caa r Gln	ttc Phe	Gln	Val	Val	Ile	Lys	Pro	agc Ser 85	Pro	tct Ser	aat Asn	atc Ile	352
cag ga Gln G 90	aa cte lu Le	c tat u Tyr	tta Leu	aaa Lys 95	agc Ser	tta Leu	gaa Glu	gtg Val	tta Leu 100	Gly	ata Ile	aac Asn	ctt Leu	aat Asn 105	400
gag ca Glu H	at ga is As	t ata p Ile	cga Arg 110	ttt Phe	gta Val	gaa Glu	gac Asp	aat Asn 115	Trp	gag Glu	agt Ser	ccg Pro	act Thr 120	Leu	448
Gly A	ca tg la Tr	g ggg p Gly 125	Leu	ggc Gly	tgg Trp	gaa Glu	gtg Val 130	Trp	ctt Leu	gat Asp	ggc	ato Met	: GIU	ı gtt ı Val	496
acg c Thr G	aa tt ln Ph 14	e Thr	tat Tyr	ttc Phe	cag Gln	caa Gln 145	ı Val	ggg	ggc Gly	att / Ile	gct Ala 150	ι Суя	ago Ser	c cct Pro	544

att Ile	cct Pro 155	gta Val	gag Glu	atc Ile	act Thr	tac Tyr 160	ggc Gly	tta Leu	gaa Glu	aga Arg	tta Leu 165	gcg Ala	atg Met	tat Tyr	gtg Val	592
caa Gln 170	aaa Lys	gtg Val	gaa Glu	aat Asn	atc Ile 175	cta Leu	gag Glu	att Ile	gaa Glu	tgg Trp 180	gct Ala	aaa Lys	aaa Lys	aat Asn	cat His 185	640
gac Asp	agc Ser	gtg Val	aat Asn	tac Tyr 190	gca Ala	caa Gln	gtg Val	cat His	ttg Leu 195	gaa Glu	agc Ser	gaa Glu	tac Tyr	gaa Glu 200	ttc Phe	688
agc Ser	aag Lys	tat Tyr	cat His 205	ttt Phe	gaa Glu	aca Thr	gcg Ala	agc Ser 210	gtg Val	aaa Lys	cgg Arg	cta Leu	tta Leu 215	gaa Glu	atg Met	736
ttt Phe	aaa Lys	aac Asn 220	gct Ala	caa Gln	gcc Ala	gaa Glu	gcc Ala 225	ttg Leu	cat His	tgc Cys	ttg Leu	gaa Glu 230	aac Asn	aag Lys	ctc Leu	784
ccc Pro	ttg Leu 235	ccg Pro	gct Ala	tat Tyr	gat Asp	ttt Phe 240	gtg Val	atg Met	tta Leu	tgc Cys	tcg Ser 245	cat His	ttt Phe	ttc Phe	aat Asn	832
att Ile 250	tta Leu	gac Asp	gcc Ala	aga Arg	aaa Lys 255	gcg Ala	att Ile	tcg Ser	gtg Val	gct Ala 260	gaa Glu	agg Arg	caa Gln	aat Asn	tat Tyr 265	880
att Ile	tta Leu	caa Gln	atc Ile	agg Arg 270	gat Asp	tta Leu	gcc Ala	aaa Lys	ggg Gly 275	tgt Cys	gcg Ala	ctt Leu	ctt Leu	tat Tyr 280	aaa Lys	928
gaa Glu	caa Gln	gaa Glu	gaa Glu 285	gag Glu	agg Arg	gaa Glu	gag Glu	cgt Arg 290	tta Leu	aaa Lys	aac Asn	gct Ala	tta Leu 295	aca Thr	aag Lys	976
			ggc Gly			taa	ggaa	gtg	ttgg	tagt	tt t	gaat	cgcc	t		1024
			gaac agcg			atca	tggg	a ta	atag	cggg	ttg	aatg	tgg	ggag	tgaaaa	1084 1104
	< <	211> 212>	104 303 PRT Hel		acte	r py	lori									
Met			104 Phe	Ser	Ser	Leu	Leu	. Leu	Lys	Leu	Gln	Glu	Tyr	Trp	Lys	
1			Cys	5				. Pro	10				Ala	15	Ala	
Gly	Thr		20 His	Pro	Ala	Thr	Leu 40	25 Leu	. Arg	Ser	Leu	. Asp 45	30 Lys	Lys	Pro	
Trp	Asn 50	35 Val	Ala	Tyr	Val	Ala 55		Ser	Arg	Arg	Pro		Asp	Gly	Arg	
Туг 65		Glu	. Asn	Pro	Asn 70		Leu	ı Gly	Ser	туr 75	-	Gln	Phe	e Gln	Val 80	

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Val Ile Lys Pro Ser Pro Ser Asn Ile Gln Glu Leu Tyr Leu Lys Ser
                                    90
Leu Glu Val Leu Gly Ile Asn Leu Asn Glu His Asp Ile Arg Phe Val
                               105
            100
Glu Asp Asn Trp Glu Ser Pro Thr Leu Gly Ala Trp Gly Leu Gly Trp
                                                125
                            120
Glu Val Trp Leu Asp Gly Met Glu Val Thr Gln Phe Thr Tyr Phe Gln
                                            140
                        135
Gln Val Gly Gly Ile Ala Cys Ser Pro Ile Pro Val Glu Ile Thr Tyr
                    150
                                        155
Gly Leu Glu Arg Leu Ala Met Tyr Val Gln Lys Val Glu Asn Ile Leu
                165
                                    170
Glu Ile Glu Trp Ala Lys Lys Asn His Asp Ser Val Asn Tyr Ala Gln
                                185
                                                    190
            180
Val His Leu Glu Ser Glu Tyr Glu Phe Ser Lys Tyr His Phe Glu Thr
                            200
                                                205
Ala Ser Val Lys Arg Leu Leu Glu Met Phe Lys Asn Ala Gln Ala Glu
                       215
                                            220
Ala Leu His Cys Leu Glu Asn Lys Leu Pro Leu Pro Ala Tyr Asp Phe
                                        235
                   230
Val Met Leu Cys Ser His Phe Phe Asn Ile Leu Asp Ala Arg Lys Ala
                                   250
                245
Ile Ser Val Ala Glu Arg Gln Asn Tyr Ile Leu Gln Ile Arg Asp Leu
                               265
                                                    270
            260
Ala Lys Gly Cys Ala Leu Leu Tyr Lys Glu Gln Glu Glu Arg Glu
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Glu Arg Leu Lys Asn Ala Leu Thr Lys Ala Glu Asn Gly Val Ser
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taaaa atg gcg caa aaa act ctt ttg att atc act gat ggc att ggg tat
                                                                      110
      Met Ala Gln Lys Thr Leu Leu Ile Ile Thr Asp Gly Ile Gly Tyr
                                                                      158
cgt aaa gat agc gat cat aac gct ttc ttc cat gcc aaa aaa ccc act
Arg Lys Asp Ser Asp His Asn Ala Phe Phe His Ala Lys Lys Pro Thr
                                                                      206
tat gat ttg atg ttt aaa acc ttg cct tat agc ctg att gat acg cat
Tyr Asp Leu Met Phe Lys Thr Leu Pro Tyr Ser Leu Ile Asp Thr His
                                                                      254
ggc ttg agc gtg ggc tta cct aag ggg caa atg gga aat tct gaa gtg
Gly Leu Ser Val Gly Leu Pro Lys Gly Gln Met Gly Asn Ser Glu Val
                                                                      302
ggg cat atg tgt att ggg gct ggt agg gtg ctc tat cag gat tta gtc
Gly His Met Cys Ile Gly Ala Gly Arg Val Leu Tyr Gln Asp Leu Val
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aaa Lys 80	att Ile	tct Ser	tta Leu	agc Ser	ctt Leu 85	caa Gln	aac Asn	gat Asp	gaa Glu	tta Leu 90	aaa Lys	aac Asn	aac Asn	ccc Pro	gct Ala 95		350
					caa Gln												398
atg Met	agc Ser	gat Asp	gga Gly 115	ggc Gly	gtg Val	cat His	tca Ser	cac His 120	att Ile	gag Glu	cat His	ttt Phe	atc Ile 125	gct Ala	ctg Leu		446
gct Ala	tta Leu	gag Glu 130	tgt Cys	gaa Glu	aaa Lys	tcc Ser	cat His 135	aaa Lys	aaa Lys	gtc Val	tgt Cys	ctg Leu 140	cat His	tta Leu	atc Ile		494
acc Thr	gat Asp 145	ggg Gly	cgc Arg	gat Asp	gtc Val	gct Ala 150	cct Pro	aaa Lys	agc Ser	gct Ala	tta Leu 155	act Thr	tat Tyr	tta Leu	aaa Lys		542
					tgc Cys 165												590
					atg Met												638
ctt Leu	gcg Ala	tat Tyr	cat His 195	agc Ser	tta Leu	atg Met	Gly ggg	ctt Leu 200	aat Asn	cac His	acg Thr	cct Pro	tta Leu 205	agc Ser	cct Pro		686
					agc Ser												734
					ttt Phe												782
					aat Asn 245												830
					aaa Lys												878
					gct Ala												926
					ccc Pro												974
					aac Asn											1	L022

aaa tac gcg cat gta acc ttt ttc atc aat ggc gga gtg gag acg cct Lys Tyr Ala His Val Thr Phe Phe Ile Asn Gly Gly Val Glu Thr Pro 320

ttt aaa aat gaa aac cgg gtg ctt atc caa agc cct aaa gtt acc act Phe Lys Asn Glu Asn Arg Val Leu Ile Gln Ser Pro Lys Val Thr Thr

tat gac tta aag cct gaa atg agc gct aaa gaa gta acc ctt gcg gtg

Tyr Asp Leu Lys Pro Glu Met Ser Ala Lys Glu Val Thr Leu Ala Val

360

365

tta gag caa atg aaa cta ggc acg gat ttg atc att gtg aat ttt gct
Leu Glu Gln Met Lys Leu Gly Thr Asp Leu Ile Ile Val Asn Phe Ala
370 375 380

aat ggc gat atg gta ggg cat acg ggg aat ttt gaa gcg agc gtc aaa
Asn Gly Asp Met Val Gly His Thr Gly Asn Phe Glu Ala Ser Val Lys
385 390 395

gcg gtg gaa gca gtg gat gca tgt tta ggg gaa atc ctt tca ctg gct
Ala Val Glu Ala Val Asp Ala Cys Leu Gly Glu Ile Leu Ser Leu Ala
400 405 410 415

aaa aaa ttg gat tac gcc atg ctt tta acc agc gat cat ggg aat tgc 1358
Lys Lys Leu Asp Tyr Ala Met Leu Leu Thr Ser Asp His Gly Asn Cys
420 425 430

gag cgc atg aaa gac gaa aac caa aac ccc tta acc aac cac acc gcc 1406 Glu Arg Met Lys Asp Glu Asn Gln Asn Pro Leu Thr Asn His Thr Ala 435 440 445

ggg agc gtg tat tgc ttt gtt tta ggg gat gga gtc aaa tcc ata aaa 1454 Gly Ser Val Tyr Cys Phe Val Leu Gly Asp Gly Val Lys Ser Ile Lys 450 455 460

aac gga gcc tta aac aat atc gct agc agc gtg tta aaa ctc atg ggc
Asn Gly Ala Leu Asn Asn Ile Ala Ser Ser Val Leu Lys Leu Met Gly
465 470 475

ctt aaa gcc cca gca acg atg gac gaa ccc cta ttt taaactaaag 1548 Leu Lys Ala Pro Ala Thr Met Asp Glu Pro Leu Phe

gaaaagaatg caaattgatg acgcattatt gcaacgcttg gaaaaattga gcatgctaga 1608 gattaaagat ga 1620

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<212> PRT

<213> Helicobacter pylori

<400> 106

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1 5 10 15

Lys Asp Ser Asp His Asn Ala Phe Phe His Ala Lys Lys Pro Thr Tyr

20 25 30

Asp Leu Met Phe Lys Thr Leu Pro Tyr Ser Leu Ile Asp Thr His Gly 40 Leu Ser Val Gly Leu Pro Lys Gly Gln Met Gly Asn Ser Glu Val Gly His Met Cys Ile Gly Ala Gly Arg Val Leu Tyr Gln Asp Leu Val Lys 70 75 Ile Ser Leu Ser Leu Gln Asn Asp Glu Leu Lys Asn Asn Pro Ala Phe 90 Leu Asn Thr Ile Gln Lys Ser Pro Val Val His Leu Met Gly Leu Met 105 Ser Asp Gly Gly Val His Ser His Ile Glu His Phe Ile Ala Leu Ala 120 Leu Glu Cys Glu Lys Ser His Lys Lys Val Cys Leu His Leu Ile Thr 135 Asp Gly Arg Asp Val Ala Pro Lys Ser Ala Leu Thr Tyr Leu Lys Gln 150 155 Met Gln Asn Ile Cys Asn Glu Ser Ile Gln Ile Ala Thr Ile Ser Gly 170 165 Arg Phe Tyr Ala Met Asp Arg Asp Lys Arg Phe Glu Arg Ile Glu Leu 185 190 180 Ala Tyr His Ser Leu Met Gly Leu Asn His Thr Pro Leu Ser Pro Ser 200 205 Glu Tyr Ile Gln Ser Gln Tyr Asp Lys Asn Ile Thr Asp Glu Phe Ile 215 220 Met Pro Ala Cys Phe Lys Asn Tyr Cys Gly Met Gln Asp Asp Glu Ser 235 230 Phe Ile Phe Ile Asn Phe Arg Asn Asp Arg Ala Arg Glu Ile Val Ser 245 250 Ala Leu Gly Gln Lys Gln Phe Ser Gly Phe Lys Arg Gln Val Phe Lys 260 265 270 Lys Leu His Ile Ala Thr Met Thr Pro Tyr Asp Asn Thr Phe Pro Tyr 280 285 Pro Val Leu Phe Pro Lys Glu Ser Val Gln Asn Thr Leu Ala Glu Val 295 300 Val Ser Gln His Asn Leu Thr Gln Ser His Ile Ala Glu Thr Glu Lys 310 315 Tyr Ala His Val Thr Phe Phe Ile Asn Gly Gly Val Glu Thr Pro Phe 325 330 Lys Asn Glu Asn Arg Val Leu Ile Gln Ser Pro Lys Val Thr Thr Tyr 345 Asp Leu Lys Pro Glu Met Ser Ala Lys Glu Val Thr Leu Ala Val Leu 360 365 Glu Gln Met Lys Leu Gly Thr Asp Leu Ile Ile Val Asn Phe Ala Asn 375 380 Gly Asp Met Val Gly His Thr Gly Asn Phe Glu Ala Ser Val Lys Ala 390 395 Val Glu Ala Val Asp Ala Cys Leu Gly Glu Ile Leu Ser Leu Ala Lys 410 Lys Leu Asp Tyr Ala Met Leu Leu Thr Ser Asp His Gly Asn Cys Glu 425 Arg Met Lys Asp Glu Asn Gln Asn Pro Leu Thr Asn His Thr Ala Gly 440 Ser Val Tyr Cys Phe Val Leu Gly Asp Gly Val Lys Ser Ile Lys Asn 455 460 Gly Ala Leu Asn Asn Ile Ala Ser Ser Val Leu Lys Leu Met Gly Leu 475 470 Lys Ala Pro Ala Thr Met Asp Glu Pro Leu Phe

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     <220>
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                                                                      110
            Met Asn Phe Gln Glu Asn Leu Ala Ala Leu Asp Leu Glu
              1
tat ctt tgg cac cct tgt tcg caa atg caa gag cat caa aat ttc ccc
                                                                      158
Tyr Leu Trp His Pro Cys Ser Gln Met Gln Glu His Gln Asn Phe Pro
     15
                                                                      206
att atc ccc att aaa aag gct caa ggg att tac ctc tat gat ttt aat
Ile Ile Pro Ile Lys Lys Ala Gln Gly Ile Tyr Leu Tyr Asp Phe Asn
                     35
30
gat aac gct tac atg gat ttg atc agc tca tgg tgg gtg aat ctt ttt
                                                                      254
Asp Asn Ala Tyr Met Asp Leu Ile Ser Ser Trp Trp Val Asn Leu Phe
                 50
                                                                      302
ggg cat aat aac gcc tac atc agc cag caa ctc aaa aat caa att gat
Gly His Asn Asn Ala Tyr Ile Ser Gln Gln Leu Lys Asn Gln Ile Asp
                                                                      350
gat tta gag cat gtc ctt ttg gct tct ttt agc cat aag ccc att atc
Asp Leu Glu His Val Leu Leu Ala Ser Phe Ser His Lys Pro Ile Ile
                             85
         80
                                                                      398
acg ctc tct caa agg ctt tgc cag ctc act cat atg gat aaa tgc ttt
Thr Leu Ser Gln Arg Leu Cys Gln Leu Thr His Met Asp Lys Cys Phe
     95
                        100
tat gcg gat aac ggc tca tct tgt gtt gaa atc gct ttg aaa atg agc
                                                                      446
Tyr Ala Asp Asn Gly Ser Ser Cys Val Glu Ile Ala Leu Lys Met Ser
110
                    115
                                                             125
                                                                      494
tat cac gcc cat ttt tta aag aat caa acg cgc cgc aaa aag ctt ttt
Tyr His Ala His Phe Leu Lys Asn Gln Thr Arg Arg Lys Lys Leu Phe
                130
                                                                      542
tta tcg ctc tct aat tcc tat cat ggc gag act ttg gga gcg tta agc
Leu Ser Leu Ser Asn Ser Tyr His Gly Glu Thr Leu Gly Ala Leu Ser
                                                     155
            145
gtg ggc gat gtg aaa ctt tat aaa gac act tac acc cct tta ttg ctc
                                                                      590
Val Gly Asp Val Lys Leu Tyr Lys Asp Thr Tyr Thr Pro Leu Leu
        160
                                                 170
                                                                      638
aaa aat ctc acc aca cct gtg cct aaa aac gac cat gaa ata gaa aat
Lys Asn Leu Thr Thr Pro Val Pro Lys Asn Asp His Glu Ile Glu Asn
                        180
                                             185
    175
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agt tt Ser Le 190															686
tgc gc Cys Al															734
att ta Ile Ty															782
aaa aa Lys As															830
aca gg Thr Gl 25	y Ser														878
tta tg Leu Cy 270															926
cta tt Leu Le				_							_			_	974
gaa aa Glu As															1022
gca tg Ala Cy															1070
gtt at Val I1 33	e Glu														1118
caa aa Gln As 350	c gca n Ala	tta Leu	aaa Lys	ccc Pro 355	ttg Leu	atg Met	gag Glu	caa Gln	caa Gln 360	gtg Val	gtg Val	tct Ser	gat Asp	tta Leu 365	1166
agg ca Arg Hi	t ttg s Leu	ggc Gly	atg Met 370	gtc Val	ttt Phe	gcc Ala	ttt Phe	gaa Glu 375	gtc Val	ttt Phe	att Ile	caa Gln	acc Thr 380	aaa Lys	1214
gag cg Glu Ar															1262
tta tt Leu Le		Pro													1310
atc ac Ile Th 41	r His														1358

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ctt gat gag tta aga aaa ggc tgaaagcgtt tttaaaaata aaatagtaaa 1409
Leu Asp Glu Leu Arg Lys Gly
430 435

aagcttgaat tggatcaagc gatagctttt t 1440
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<211> 436

<212> PRT

<213> Helicobacter pylori

<400> 108

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360

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Gly Met Val Phe Ala Phe Glu Val Phe Ile Gln Thr Lys Glu Arg Leu
                                             380
                        375
Ser Leu Ala Val Phe Lys Lys Thr Leu Lys Lys Gly Leu Leu Leu Arg
                    390
                                        395
Pro Leu Asn Asn Thr Ile Tyr Leu Met Pro Pro Tyr Ile Ile Thr His
                405
                                    410
Glu Glu Val Lys Lys Ala Val Ala Gly Leu Val Glu Ile Leu Asp Glu
                                425
            420
Leu Arg Lys Gly
        435
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aaaagaaaaa aaggaaacaa c atg gga aaa atg aaa caa gaa aca gcg att
                                                                       111
                        Met Gly Lys Met Lys Gln Glu Thr Ala Ile
                                                                       159
gac tat gaa aaa tta gcg aat cat tgg aat aat aat gat gaa aac agc
Asp Tyr Glu Lys Leu Ala Asn His Trp Asn Asn Asn Asp Glu Asn Ser
                                      20
                 15
                                                                       207
gaa gca cta aac gct ttt gca gac gct tac ctt tat aaa cat gag aaa
Glu Ala Leu Asn Ala Phe Ala Asp Ala Tyr Leu Tyr Lys His Glu Lys
                                  35
                                                                       255
aag agt caa aag att cgg gca ata gag ata agt tct cta aac aaa gcc
Lys Ser Gln Lys Ile Arg Ala Ile Glu Ile Ser Ser Leu Asn Lys Ala
                              50
                                                                       304
tgc atg gga gaa ttt tac cac aaa aac cca aaa tta ttt taataacgat
Cys Met Gly Glu Phe Tyr His Lys Asn Pro Lys Leu Phe
                          65
                                                                       360
cgctccaagg aaccaacgcc ccatgacctc aagaaaagag aatagcttga atcggt
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      <211> 71
      <212> PRT
      <213> Helicobacter pylori
      <400> 110
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Asn His Trp Asn Asn Asn Asp Glu Asn Ser Glu Ala Leu Asn Ala Phe
            2.0
                                 2.5
Ala Asp Ala Tyr Leu Tyr Lys His Glu Lys Lys Ser Gln Lys Ile Arg
                             40
                                                 45
Ala Ile Glu Ile Ser Ser Leu Asn Lys Ala Cys Met Gly Glu Phe Tyr
His Lys Asn Pro Lys Leu Phe
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65

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70

Ser Ile Val Lys Asn Leu Glu Lys Ile Ala Leu Asp Phe Lys Ser Asp

190 185 180 685 aga cat agt att tcg caa aga gct ttt gaa ttt ttt aag tat atg aat Arg His Ser Ile Ser Gln Arg Ala Phe Glu Phe Phe Lys Tyr Met Asn 200 195 tat caa aat tta agc ttg act gat aaa ggc aat atg ttt tta gtg gct 733 Tyr Gln Asn Leu Ser Leu Thr Asp Lys Gly Asn Met Phe Leu Val Ala 781 aag ttt ttt aaa gat agt gct tta ctt gtt aat att gct agg ttt gaa Lys Phe Phe Lys Asp Ser Ala Leu Leu Val Asn Ile Ala Arg Phe Glu 230 235 829 atg aaa aag ata gat gat agt gtt aaa aat tct aac cca caa gac aat Met Lys Lys Ile Asp Asp Ser Val Lys Asn Ser Asn Pro Gln Asp Asn 250 877 tta tta gac aaa caa gtt tgg ctc aat ctt tta gag cat tta aaa aga Leu Leu Asp Lys Gln Val Trp Leu Asn Leu Leu Glu His Leu Lys Arg 265 260 925 ctt gaa gag gaa aat tat tgt ttt gct aag aaa cga aaa gaa ttc tta Leu Glu Glu Glu Asn Tyr Cys Phe Ala Lys Lys Arg Lys Glu Phe Leu 280 973 gag act aga gcg atg gag cta tca aaa gat tta aaa ttt tta aca cag Glu Thr Arg Ala Met Glu Leu Ser Lys Asp Leu Lys Phe Leu Thr Gln 295 1021 gct aat gaa aat gat ttg ccc att tat gaa aga ggg caa agg gat aaa Ala Asn Glu Asn Asp Leu Pro Ile Tyr Glu Arg Gly Gln Arg Asp Lys 315 310 atc att aaa cgc tgt gaa aaa tcg ctt aac ttt ttg cag aaa gaa tta 1069 Ile Ile Lys Arg Cys Glu Lys Ser Leu Asn Phe Leu Gln Lys Glu Leu 330 caa tgc ttt aaa acc tta ttg aaa agt gca agt ata gct tta gaa aac 1117 Gln Cys Phe Lys Thr Leu Leu Lys Ser Ala Ser Ile Ala Leu Glu Asn 345 1165 ttg caa aat aac cat caa atc aca gcc gtt aca caa gac acg caa gaa Leu Gln Asn Asn His Gln Ile Thr Ala Val Thr Gln Asp Thr Gln Glu 360 aac aca aac gcg ctc aaa aat act act caa gat ttt aac aaa act acc 1213 Asn Thr Asn Ala Leu Lys Asn Thr Thr Gln Asp Phe Asn Lys Thr Thr 375 1255 aat gaa cca aca aac cct aac aat aac tat gga atg gat ttt Asn Glu Pro Thr Asn Pro Asn Asn Asn Tyr Gly Met Asp Phe 390 1300 taaaaccatc cataaaatta aataacttta cttagcgtat ttttt

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<213> Helicobacter pylori

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His Leu Asp Ser Leu Lys Ser Leu Leu Glu Lys Thr His Trp Glu Lys
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Glu Lys Phe Thr Pro Pro Ile Asn Glu Lys Glu Leu Asn Arg Gln Leu
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                85
Tyr Lys Lys Ile Gln Lys Leu Ala Val Tyr Lys Ser Pro Leu Ile Lys
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Glu Leu Tyr Thr Arg Leu Lys Ser Met Ser Lys Val Phe Ile Ser Lys
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                                   170
Ser Ile Val Lys Asn Leu Glu Lys Ile Ala Leu Asp Phe Lys Ser Asp
                                                    190
                               185
Arg His Ser Ile Ser Gln Arg Ala Phe Glu Phe Phe Lys Tyr Met Asn
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                                           220
Lys Phe Phe Lys Asp Ser Ala Leu Leu Val Asn Ile Ala Arg Phe Glu
                    230
                                       235
Met Lys Lys Ile Asp Asp Ser Val Lys Asn Ser Asn Pro Gln Asp Asn
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                                    250
Leu Leu Asp Lys Gln Val Trp Leu Asn Leu Leu Glu His Leu Lys Arg
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                                                    270
Leu Glu Glu Glu Asn Tyr Cys Phe Ala Lys Lys Arg Lys Glu Phe Leu
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Glu Thr Arg Ala Met Glu Leu Ser Lys Asp Leu Lys Phe Leu Thr Gln
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                                           300
Ala Asn Glu Asn Asp Leu Pro Ile Tyr Glu Arg Gly Gln Arg Asp Lys
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                                       315
Ile Ile Lys Arg Cys Glu Lys Ser Leu Asn Phe Leu Gln Lys Glu Leu
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Gln Cys Phe Lys Thr Leu Leu Lys Ser Ala Ser Ile Ala Leu Glu Asn
                               345
Leu Gln Asn Asn His Gln Ile Thr Ala Val Thr Gln Asp Thr Gln Glu
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                                                365
Asn Thr Asn Ala Leu Lys Asn Thr Thr Gln Asp Phe Asn Lys Thr Thr
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Lys	Asp 50		Glu	Ser	Glu	Leu 55		Glu	Phe	Asp	Gly 60		Ser	Asp	His	
Val 65	His	Leu	Leu	Ile	Asn 70		Pro	Pro	Lys	Val 75		Val	Ser	Lys	Leu 80	
	Asn	Ser	Leu	Lys 85	Gly	Val	Ser	Ser	Arg 90	Leu	Thr	Arg	Gln	His 95	His	
Phe	Lys	Ser	Val		Ala	Ser	Leu	Trp 105		Lys	His	Leu	Trp 110	Ser	Pro	
Ser	Tyr	Phe 115		Gly	Ser	Cys	Gly 120		Ala	Pro	Leu	Glu 125	Met	Ile	Lys	
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	<2	220> 221> 222>		L)	. (100	00)										
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tct Ser	agc Ser	gcg Ala	ttg Leu	att Ile 10	acg Thr	cct Pro	ttt Phe	aaa Lys	aaa Lys 15	gat Asp	ttg Leu	agc Ser	gtt Val	gat Asp 20	gag Glu	163
gcc Ala	gct Ala	tat Tyr	gaa Glu 25	acc Thr	ttg Leu	atc Ile	aag Lys	cgc Arg 30	caa Gln	att Ile	ttt Phe	cag Gln	ggc Gly 35	atg Met	gac Asp	211
gca Ala	tgc Cys	gtg Val 40	cct Pro	gtt Val	ggc Gly	acg Thr	aca Thr 45	gga Gly	gaa Glu	tcc Ser	gcc Ala	acg Thr 50	ctc Leu	acc Thr	cac His	259
aaa Lys	gag Glu 55	cac His	atg Met	cgt Arg	tgc Cys	att Ile 60	gaa Glu	atc Ile	gcc Ala	ata Ile	gaa Glu 65	act Thr	tgc Cys	aaa Lys	aac Asn	307
	aaa Lys															355
agt Ser	aac Asn	gcc Ala	acg Thr	agc Ser 90	gag Glu	tcc Ser	ctt Leu	tct Ser	tta Leu 95	gca Ala	aag Lys	ttc Phe	gct Ala	caa Gln 100	aaa Lys	403
atc Ile	ggc Gly	gcg Ala	gat Asp 105	gcg Ala	att Ile	tta Leu	tgc Cys	gta Val 110	agc Ser	cct Pro	tat Tyr	tat Tyr	aac Asn 115	cgc Arg	ccc Pro	451
acc	caa	caa	ggc	ttg	ttt	gaa	cat	tat	aaa	acc	atc	gct	caa	tcg	gtg	499

Thr	Gln	Gln 120	Gly	Leu	Phe	Glu	ніs 125	Tyr	Lys	Thr	Ile	Ala 130	Gln	Ser	Val	
	atc Ile 135															547
	gaa Glu															595
aaa Lys	gcc Ala	att Ile	aaa Lys	gaa Glu 170	gcg Ala	tct Ser	ggc Gly	tct Ser	ttg Leu 175	aaa Lys	agg Arg	gta Val	aca Thr	gaa Glu 180	ttg Leu	643
cat His	tat Tyr	tat Tyr	gaa Glu 185	aaa Lys	gat Asp	ttt Phe	aaa Lys	att Ile 190	ttt Phe	agt Ser	Gly ggg	gaa Glu	gat Asp 195	tcg Ser	ctc Leu	691
aac Asn	cac His	tcc Ser 200	atc Ile	atg Met	ttt Phe	tca Ser	ggg Gly 205	Gly aaa	tgc Cys	ggc Gly	gtg Val	att Ile 210	tca Ser	gtg Val	acc Thr	739
ggt Gly	aat Asn 215	tta Leu	atg Met	ccc Pro	aat Asn	ctg Leu 220	att Ile	tca Ser	caa Gln	atg Met	gtc Val 225	aat Asn	tgc Cys	gcg Ala	ctc Leu	787
aaa Lys 230	caa Gln	aaa Lys	tac Tyr	caa Gln	caa Gln 235	gcc Ala	cta Leu	gaa Glu	atc Ile	caa Gln 240	aat Asn	aag Lys	ctt Leu	ttt Phe	tgt Cys 245	835
ttg Leu	cac His	caa Gln	gcc Ala	ctt Leu 250	ttt Phe	gta Val	gaa Glu	aca Thr	aat Asn 255	ccc Pro	atc Ile	cct Pro	att Ile	aaa Lys 260	atg Met	883
gct Ala	atg Met	cat His	tta Leu 265	gcc Ala	ggc Gly	ttg Leu	att Ile	gaa Glu 270	aac Asn	cca Pro	agc Ser	tac Tyr	aga Arg 275	ctg Leu	cct Pro	931
tta Leu	gtg Val	gcc Ala 280	cca Pro	agc Ser	aaa Lys	Glu	acg Thr 285	att Ile	caa Gln	ctt Leu	Leu	gaa Glu 290	Lys	act Thr	tta Leu	979
	caa Gln 295						tga	atgg [.]	ttc	caat	caca	tg a	aaaa	taaa	a	1030
ccc	tagt	gat (cage	ggcg	cg a	ctag	aggg	a tt	ggca	aggc	gat	attg [.]	tac			1080
	<: <:		300 PRT	icob	acte:	r py	lori									
W ∽+	< Gln	400>		Cor	C077	Sar	7 .1 ~	Lou	т1.	ጥኮሎ	Dro	Dhe	Lare	Tare	Δen	
1				5					10					15		
ьeu	Ser	val	Asp 20	GIU	ATG	Ald	тÀŢ	25	1111	ьeu	тте	пур	30	GIII	TTG	

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Tyr Tyr Asn Arg Pro Thr Gln Gln Gly Leu Phe Glu His Tyr Lys Thr
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Ile Ala Gln Ser Val Glu Ile Pro Val Met Leu Tyr Asp Val Pro Ser
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Arg Thr Gly Val Ser Ile Glu Val Pro Thr Ala Leu Lys Leu Phe Arg
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Glu Val Pro Asn Ile Lys Ala Ile Lys Glu Ala Ser Gly Ser Leu Lys
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               165
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Gly Glu Asp Ser Leu Asn His Ser Ile Met Phe Ser Gly Gly Cys Gly
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Val Ile Ser Val Thr Gly Asn Leu Met Pro Asn Leu Ile Ser Gln Met
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Val Asn Cys Ala Leu Lys Gln Lys Tyr Gln Gln Ala Leu Glu Ile Gln
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                                       235
Asn Lys Leu Phe Cys Leu His Gln Ala Leu Phe Val Glu Thr Asn Pro
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        Met Leu Leu Ile Val Phe Phe Lys Phe Tyr Phe Gln Tyr Ser
att aaa aaa aaa tca ttt tat ttt att ttt gtt ata att caa gct att
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Ile Lys Lys Lys Ser Phe Tyr Phe Ile Phe Val Ile Ile Gln Ala Ile
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Phe Ile Phe Asn Leu Arg Arg Cys Arg Met Asp Asn Gln Lys Ile Thr
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acc Thr 95	ttg Leu	atc Ile	gct Ala	tat Tyr	tgt Cys 100	ttt Phe	gga Gly	GJÀ aaa	ctt Leu	gtg Val 105	gtc Val	tat Tyr	tgt Cys	atc Ile	atg Met 110	3	397
ctc Leu	tct Ser	tta Leu	ggc Gly	gaa Glu 115	ttg Leu	gct Ala	agc Ser	gtt Val	tat Tyr 120	ccc Pro	act Thr	aca Thr	gga Gly	agt Ser 125	ttt Phe	4	145
Gly ggg	gat Asp	tat Tyr	gcg Ala 130	gct Ala	aaa Lys	ttc Phe	ata Ile	ggc Gly 135	cct Pro	ggc Gly	acg Thr	ggc Gly	tat Tyr 140	atg Met	gtt Val	4	193
ttt Phe	tgg Trp	atg Met 145	tat Tyr	tgg Trp	ctt Leu	ggc Gly	tgg Trp 150	gtg Val	atc Ile	acg Thr	gtg Val	gcg Ala 155	tta Leu	gaa Glu	tac Tyr		541
atc Ile	gct Ala 160	ata Ile	ggc Gly	atg Met	ctc Leu	atg Met 165	caa Gln	cgc Arg	tgg Trp	ttt Phe	gcg Ala 170	gat Asp	att Ile	ccc Pro	atc Ile	Ĭ	589
cat His 175	tat Tyr	tgg Trp	gtt Val	att Ile	tta Leu 180	tgc Cys	att Ile	gcg Ala	tta Leu	gtt Val 185	ttt Phe	tta Leu	ttg Leu	aac Asn	ttt Phe 190	(637
					ttt Phe											(685
		Leu	Ala	Va1	atc Ile	Ala	Phe	Ile	Gly	Ile	Gly	Ala	Ile	Gly		•	733
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cat His	ttt Phe 240	ggc Gly	gat Asp	aag Lys	Gly	ttt Phe 245	ttc Phe	cct Pro	aat Asn	ggg Gly	agc Ser 250	gca Ala	gcg Ala	gtt Val	ttt Phe	;	829
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Gly aaa	gtg Val	gct Ala	gtg Val	gga Gly 275	gag Glu	act Thr	aaa Lys	aac Asn	gct Ala 280	agc Ser	gaa Glu	gtg Val	atg Met	ccc Pro 285	aaa Lys		925

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acg gcg atg t Thr Ala Met F								1165
atg att tat g Met Ile Tyr G		Lys Gln I				l Phe		1213
caa ctc aac c Gln Leu Asn A 385								1261
tct ttt tct c Ser Phe Ser I 400								1309
gtc gtg gaa g Val Val Glu <i>F</i> 415							J - J	1357
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<213> Helicobacter pylori

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Phe Asn Leu Arg Arg Cys Arg Met Asp Asn Gln Lys Ile Thr His Gln
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65 70 75 80
Val Gly Thr Gly Gly Asn Ile Ala Ser Ala Gly Pro Leu Gly Thr Leu

Val Gly Thr Gly Gly Ash lie Ala Ser Ala Gly Pro Leu Gly Thr Leu 85 90 95 Ile Ala Tyr Cys Phe Gly Gly Leu Val Val Tyr Cys Ile Met Leu Ser

100 105 110

Leu Gly Glu Leu Ala Ser Val Tyr Pro Thr Thr Gly Ser Phe Gly Asp

115 120 125
Tyr Ala Ala Lys Phe Ile Gly Pro Gly Thr Gly Tyr Met Val Phe Trp
130 135 140

Met Tyr Trp Leu Gly Trp Val Ile Thr Val Ala Leu Glu Tyr Ile Ala 145 150 155 160

Ile Gly Met Leu Met Gln Arg Trp Phe Ala Asp Ile Pro Ile His Tyr 165 170 175

Trp Val Ile Leu Cys Ile Ala Leu Val Phe Leu Leu Asn Phe Phe Ser 180 185 190

Val Lys Ile Phe Ala Glu Gly Glu Phe Phe Phe Ser Leu Ile Lys Val 195 200 205 Leu Ala Val Ile Ala Phe Ile Gly Ile Gly Ala Ile Gly Ile Ile Tyr

210 215 220

Gln Ile Tyr Ser His Gly Phe Gly Ser Ile Phe Asp Asn Phe His Phe

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260 265 270

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Val Ile Ser Val Phe Leu Pro Met Asn Asp Ser Ser Ile Thr Gln Ser 305 310 315 320

Pro Phe Val Ser Val Leu Glu Arg Ile Asn Leu Pro Phe Ile Gly Met
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Gly Ile Pro Tyr Val Ala Asp Ile Met Asn Ala Val Ile Ile Thr Ala 340 345 350

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Tyr Gly Leu Ser Lys Gln Lys Met Phe Phe Lys Val Phe Ser Gln Leu 370 375 380

Asn Arg Gln Gly Thr Pro Thr Tyr Ala Met Phe Phe Ser Leu Ser Phe

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                                                       Met Ile Pro
                                                        1
                                                                       286
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Lys Glu Arg Met Glu Arg Ala Leu Gly Ser Gly Val Ile Ile Ser Lys
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Asp Gly Tyr Ile Val Thr Asn Asn His Val Ile Asp Gly Ala Asp Lys
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                                          30
                                                                       382
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Ile Lys Val Thr Ile Pro Gly Ser Asn Lys Glu Tyr Ser Ala Thr Leu
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Val Gly Thr Asp Ser Glu Ser Asp Leu Ala Val Ile Arg Ile Thr Lys
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                                  60
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Asp Asn Leu Pro Thr Ile Lys Phe Ser Asp Ser Asn Asp Ile Ser Val
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                                                  80
                                                                       526
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                         90
                                              95
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					aga Arg 185											814
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					gaa Glu											958
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gct Ala	gaa Glu	agg Arg	aaa Lys	aac Asn 280	cct Pro	aac Asn	aaa Lys	aaa Lys	gaa Glu 285	acc Thr	att Ile	tct Ser	gct Ala	caa Gln 290	aac Asn	1102
ggc Gly	gcg Ala	caa Gln	ggc Gly 295	caa Gln	ttg Leu	aac Asn	ggg Gly	ctt Leu 300	caa Gln	gta Val	gaa Glu	gat Asp	tta Leu 305	act Thr	caa Gln	1150
gaa Glu	acc Thr	aaa Lys 310	agg Arg	tct Ser	atg Met	cgt Arg	ttg Leu 315	agc Ser	gat Asp	gat Asp	gtt Val	caa Gln 320	Gly	gtt Val	tta Leu	1198
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Asn Pro Gly Asn Ser Gly Gly Ala Leu Ile Asp Ser Arg Gly Gly Leu 130 135 140

Val Gly Ile Asn Thr Ala Ile Ile Ser Lys Thr Gly Gly Asn His Gly 145 150 155 160

Ile Gly Phe Ala Ile Pro Ser Asn Met Val Lys Asp Thr Val Thr Gln
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Gln Asp Leu Ser Gly Asp Leu Gln Asn Ser Tyr Asp Asn Lys Glu Gly
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Leu Thr Leu Ala Glu Arg Lys Asn Pro Asn Lys Lys Glu Thr Ile Ser 275 280 285

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			aat Asn 10													104
			cgt Arg													152
			gaa Glu													200
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agt Ser	gaa Glu	gat Asp	tta Leu 90	gac Asp	gat Asp	att Ile	tta Leu	agc Ser 95	tct Ser	att Ile	ttt Phe	ggg Gly	aaa Lys 100	gga Gly	ggc Gly	344
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Met Gln Lys Phe Arg Ile Lys Glu Lys Gly Ile Lys Asn Arg Lys Thr
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Ser His Val Gly Asp Leu Tyr Leu Gln Ala Arg Leu Ile Leu Pro Lys
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Leu Thr Ser Leu Leu Asn Pro Lys Ser Leu Glu Asp Phe Leu Gly Gln
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Glu His Leu Val Gly Lys Asp Ala Pro Leu Phe Lys Ala Leu Gln Ser
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aaa cac ttc ccc cat gcc ttt ttc tat ggc cct cct ggc gtg ggt aaa
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Lys His Phe Pro His Ala Phe Phe Tyr Gly Pro Pro Gly Val Gly Lys
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                                                                     310
Thr Ser Leu Ala Gln Ile Ile Ala Tyr Met Leu Glu Arg Pro Ile Leu
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					aaa Lys										454
					tta Leu 120										502
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					caa Gln										646
		_	-		gac Asp	_	_						_	_	694
-	-			_	gat Asp 200						_				742
					aat Asn										790
					tta Leu										838
					ctg Leu										886
					agg Arg										934
					gcc Ala 280										982
					tac Tyr										1030

295 300 305

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		aaa Lys														255
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75

70

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gaa Glu ctt Leu 25	act Thr 10 tgg Trp	ttg Leu	gatto gat Asp gat Asp	ttt Phe ttt Phe	gaa Glu atc Ile 30 gct	att Ile 15 ggt Gly	tct Ser caa Gln	etg affet I caa Gln gaa Glu cgc	gaa Glu aag Lys	gtg gtg Val att Ile 35	agt Ser 20 aaa Lys	ata que volume to to the volume to the volum	cgc Arg aat Asn	cct Pro ttg Leu	agt Ser caa Gln 40	112
gaa Glu ctt Leu 25 att Ile	act act Thr 10 tgg Trp tct Ser	ttg Leu gaa Glu	gattogattogattogattogattogattogattogatt	ttt Phe ttt Phe gcg Ala 45	gaa Glu atc Ile 30 gct Ala	att Ile 15 ggt Gly aaa Lys	tct Ser caa Gln aaa Lys	etg af Met I 1 caa Gln gaa Glu cgc Arg	gaa Glu aag Lys caa Gln 50 aaa	gaa Glu Agt gtg Val att Ile 35 gaa Glu act	agt Ser 20 aaa Lys agt Ser	ata Gile No. 5 ttg Leu agc Ser ttg Leu atc	cgc Arg aat Asn gat Asp	cct Pro ttg Leu cac His 55	agt Ser caa Gln 40 atg Met	112
gaa Glu ctt Leu 25 att Ile ctt Leu	act act Thr 10 tgg Trp tct Ser ttt Phe gct	ttg Leu gaa Glu att Ile	gattogattagattagat Asp gat Asp tgc Cys ggc Gly 60 gaa	ttt Phe ttt Phe gcg Ala 45 ccg Pro atg	gaa Glu atc Ile 30 gct Ala ccc Pro	att Ile 15 ggt Gly aaa Lys ggt Gly acc	tct Ser caa Gln aaa Lys ttg Leu aat	etg af	gaa Glu aag Lys caa Gln 50 aaa Lys	gaa Glu Att Ile 35 gaa Glu act Thr	agt Ser 20 aaa Lys agt Ser tca Ser acc	ata gile N 5 ttg Leu agc Ser ttg Leu atc Ile gcc	cgc Arg aat Asn gat Asp agc Ser 70 gct	cct Pro ttg Leu cac His 55 cat His	agt Ser caa Gln 40 atg Met atc Ile	112 160 208 256
gaa Glu ctt Leu 25 att Ile ctt Leu atc Ile	act act Thr 10 tgg Trp tct Ser ttt Phe gct Ala	ttg Leu gaa Glu att Ile ttt Phe aaa Lys	gattogattogattogattogattogattogattogatt	ttt Phe ttt Phe gcg Ala 45 ccg Pro atg Met	gaa Glu atc Ile 30 gct Ala ccc Pro gaa Glu gat	att Ile 15 ggt Gly aaa Lys ggt Gly acc Thr	tct Ser caa Gln aaa Lys ttg Leu aat Asn 80 gcc	etg atg affect I 1 caa Gln gaa Glu cgc Arg ggt Gly 65 atc Ile gcc	gaa Glu aag Lys caa Gln 50 aaa Lys aag Lys	gaa Glu Att Ile 35 gaa Glu act Thr atc Ile ttg	agt Ser 20 aaa Lys agt Ser tca Ser acc Thr acc	ata gile No Ser ttg Leu atc Ile gcc Ala 85 aat	cgc Arg aat Asn gat Asp agc Ser 70 gct Ala	cct Pro ttg Leu cac His 55 cat His ccc Pro	agt Ser caa Gln 40 atg Met atc Ile atg Met	112 160 208 256

Lys 105	Asp	Ile	Leu	Phe	Ile 110	Asp	Glu	Ile	His	Arg 115	Leu	Ser	Pro	Ala	Ile 120		
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					gcg Ala											į	544
					gct Ala			_	-		_					į	592
					ggc Gly											(640
					atc Ile 190											(688
					agt Ser											,	736
					tta Leu											,	784
					agc Ser											8	832
					gtg Val											\$	880
Ala	Tyr	Leu	Ser	Leu	ttg Leu 270	Ala	Asn	Ala	Gln	Gly	Lys	Pro	Val	Gly		!	928
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					tta Leu											1	024
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Arg Gln Glu Ser Leu Asp His Met Leu Phe Phe Gly Pro Pro Gly Leu
                       55
Gly Lys Thr Ser Ile Ser His Ile Ile Ala Lys Glu Met Glu Thr Asn
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                                        75
Ile Lys Ile Thr Ala Ala Pro Met Ile Glu Lys Ser Gly Asp Leu Ala
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Ala Ile Leu Thr Asn Leu Gln Ala Lys Asp Ile Leu Phe Ile Asp Glu
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                               105
           100
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                           120
Glu Asp Phe Arg Leu Asp Ile Ile Gly Ser Gly Pro Ala Ala Gln
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                       135
Thr Ile Lys Ile Asp Leu Pro Pro Phe Thr Leu Ile Gly Ala Thr Thr
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Arg Ala Gly Met Leu Ser Asn Pro Leu Arg Asp Arg Phe Gly Met Ser
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Phe Arg Met Gln Phe Tyr Asn Pro Ser Glu Leu Ala Leu Ile Ile Lys
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Lys Ala Ala Val Lys Leu Asn Gln Asp Ile Lys Gln Glu Ser Ala Asp
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Glu Ile Ala Lys Arg Ser Arg Gly Thr Pro Arg Ile Ala Leu Arg Leu
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                                           220
Leu Lys Arg Val Arg Asp Phe Ala Leu Val Lys Asn Ser Ser Leu Met
                    230
                                        235
Asp Leu Asn Ile Thr Leu His Ala Leu Asn Glu Leu Gly Val Asn Glu
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Leu Gly Phe Asp Glu Ala Asp Leu Ala Tyr Leu Ser Leu Leu Ala Asn
                               265
Ala Gln Gly Lys Pro Val Gly Leu Asn Thr Ile Ala Ala Ser Met Arg
                            280
Glu Asp Glu Gly Thr Ile Glu Asp Val Ile Glu Pro Phe Leu Leu Ala
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Thr His Glu Leu Leu Lys Ile Pro Thr Leu Asn Pro Gln Thr Leu Phe
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tct gta gga acg att cta gtg gcg ttt ttg ggg Ser Val Gly Thr Ile Leu Val Ala Phe Leu Gly 20 25	
aaa agt att ttt gaa ttt gtt aaa aat tcc tat Lys Ser Ile Phe Glu Phe Val Lys Asn Ser Tyr 35 40	Lys Gly Thr Leu Ile
cag ctc tcc cct att gaa ggg gtc atg gta gcg Gln Leu Ser Pro Ile Glu Gly Val Met Val Ala 55 60	gtt aaa atc agt ttt 308 Val Lys Ile Ser Phe 65
tca gcc gct atc gtc att tcc atg ccc att att Ser Ala Ala Ile Val Ile Ser Met Pro Ile Ile 70 75	
ctc ttt atc gct cca ggg ctt tac aag aat gaa Leu Phe Ile Ala Pro Gly Leu Tyr Lys Asn Glu 85 90	aaa aaa gtg att ttg 404 Lys Lys Val Ile Leu 95
cct ttt gtg ttt ttt ggg agt ggg atg ttt ttg Pro Phe Val Phe Phe Gly Ser Gly Met Phe Leu 100 105	att ggg gcg gcg ttt 452 Ile Gly Ala Ala Phe 110
tct tat tat gtg gtg ttc cct ttc att att gaa Ser Tyr Tyr Val Val Phe Pro Phe Ile Ile Glu 115 120 125	. Tyr Leu Ala Thr Phe
ggg agc gat gtg ttt gcg gct aat att tct gcg Gly Ser Asp Val Phe Ala Ala Asn Ile Ser Ala 135	tcc agt tac gtg agc 548 Ser Ser Tyr Val Ser 145
ttt ttc acg cgc ttg att tta ggc ttt ggc gtg Phe Phe Thr Arg Leu Ile Leu Gly Phe Gly Val 150	gcg ttt gaa ttg cct 596 Ala Phe Glu Leu Pro 160
gtt ttg gcg tat ttt ttg gct aaa gtg ggc ttg Val Leu Ala Tyr Phe Leu Ala Lys Val Gly Leu 165 170	
ttg aaa gcg tat ttt aaa tac gct att gta gtg Leu Lys Ala Tyr Phe Lys Tyr Ala Ile Val Val 180	
gcc att atc act ccc cct gat gtg gtg agt caa Ala Ile Ile Thr Pro Pro Asp Val Val Ser Glm 195 200 205	n Ile Phe Met Ala Leu
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				gag Glu							tagt	tgaa	aag a	aattt	gattt	8	389
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	Val	Ser	Val 20	-	Thr	Ile	Leu	Val 25		Phe	Leu	Gly	Cys 30	Phe	His		
Phe	Trp	Lys 35	Ser	Ile	Phe	Glu	Phe 40	Val	Lys	Asn	Ser	Tyr 45	Lys	Gly	Thr		
Leu	Ile 50		Leu	Ser	Pro	Ile 55		Gly	Val	Met	Val 60		Val	Lys	Ile		
Ser 65		Ser	Ala	Ala	Ile 70	Val	Ile	Ser	Met	Pro 75	Ile	Ile	Phe	Trp	Gln 80		
	Trp	Leu	Phe			Pro	Gly	Leu			Asn	Glu	Lys	Lys			
Ile	Leu	Pro	Phe	85 Val	Phe	Phe	Gly	Ser 105	90 Gly	Met	Phe	Leu	Ile 110	95 Gly	Ala		
Ala	Phe	Ser 115		Tyr	Val	Val	Phe 120		Phe	Ile	Ile	Glu 125		Leu	Ala		
Thr	Phe 130		Ser	Asp	Val	Phe 135		Ala	Asn	Ile	Ser 140		Ser	Ser	Tyr		
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145 Leu	Pro	Val	Leu	Ala 165	150 Tyr	Phe	Leu	Ala	Lys 170		Gly	Leu	Ile	Thr 175			
Ala	Ser	Leu	Lys 180		Tyr	Phe	Lys	Tyr 185		Ile	Val	Val	Ile 190	Phe	Ile		
Val	Ala			Ile	Thr	Pro			Val	Val	Ser			Phe	Met		
Ala		195 Pro	Leu	Val	Gly	Leu 215	200 Tyr	Gly	Leu	Ser	Ile 220	205 Leu	Ile	Ala	Lys		
Met 225	210 Val	Asn	Pro	Ala	Pro 230		Asp	Asn	Glu	Asn 235		Asn	Glu	Asn	Asn 240		
	Glu	Asn	Asn	Thr 245		Glu	Asn	Thr	Lys 250		Glu	Ser					
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ctt caa ggc tat gaa gtg aat cct aaa aac gat tgg gct tat tct agg Leu Gln Gly Tyr Glu Val Asn Pro Lys Asn Asp Trp Ala Tyr Ser Arg 45 50 55	198
tat tat ttc ttt ata gat tat ggc aat gtg ctt ttt aat aat gac tct Tyr Tyr Phe Phe Ile Asp Tyr Gly Asn Val Leu Phe Asn Asn Asp Ser 60 65 70	246
act tta caa gcg aac atg ttc act tat ggg gtg gga ggg gat ttt atg Thr Leu Gln Ala Asn Met Phe Thr Tyr Gly Val Gly Gly Asp Phe Met 75 80 85	294
gtc gcc tac gct aaa aac cct atc aac cgc tgg gct ttt ttc ttt ggc Val Ala Tyr Ala Lys Asn Pro Ile Asn Arg Trp Ala Phe Phe Gly 90 95 100	342
ttg caa ctg gcc gct aac aca tgg ata ctc aac aat aaa gtc aaa gat Leu Gln Leu Ala Ala Asn Thr Trp Ile Leu Asn Asn Lys Val Lys Asp 105 110 115 120	390
ttg gtg gtg aat act tgg gat tca tta aaa gat ttc aat ttt cac aac Leu Val Val Asn Thr Trp Asp Ser Leu Lys Asp Phe Asn Phe His Asn 125 130 135	438
act tat ttc agg gct att ggg aag ttt ggg gtg cag ttt cgc acg atc Thr Tyr Phe Arg Ala Ile Gly Lys Phe Gly Val Gln Phe Arg Thr Ile 140 145 150	486
gtt ttg tat cat aag gtg gat gta gaa att ggc atg aaa atc ttt cta Val Leu Tyr His Lys Val Asp Val Glu Ile Gly Met Lys Ile Phe Leu 155 160 165	534
act cct gaa agg cgc agt ttg ttt gaa agg agc ttt ttg ttt ttt gtt Thr Pro Glu Arg Arg Ser Leu Phe Glu Arg Ser Phe Leu Phe Phe Val 170 175 180	582
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Lys Asn Asp Trp Ala Tyr Ser Arg Tyr Tyr Phe Phe Ile Asp Tyr Gly
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Asn Val Leu Phe Asn Asn Asp Ser Thr Leu Gln Ala Asn Met Phe Thr
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Tyr Gly Val Gly Gly Asp Phe Met Val Ala Tyr Ala Lys Asn Pro Ile
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                85
Asn Arg Trp Ala Phe Phe Gly Leu Gln Leu Ala Ala Asn Thr Trp
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           100
Ile Leu Asn Asn Lys Val Lys Asp Leu Val Val Asn Thr Trp Asp Ser
                           120
                                                125
Leu Lys Asp Phe Asn Phe His Asn Thr Tyr Phe Arg Ala Ile Gly Lys
                       135
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Phe Gly Val Gln Phe Arg Thr Ile Val Leu Tyr His Lys Val Asp Val
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Phe Leu Glu Arg Phe Pro Ile Lys Asn Phe Lys Val Gln Asn Val Asp
gga aaa gat aac ctg tct aaa cga ttg ctt gaa att gaa aaa tac gat
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Gly Lys Asp Asn Leu Ser Lys Arg Leu Leu Glu Ile Glu Lys Tyr Asp
aaa aca ctt atc att ttt gat gcg gat aaa gac tat gag agt aat aaa
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Lys Thr Leu Ile Ile Phe Asp Ala Asp Lys Asp Tyr Glu Ser Asn Lys
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gaa Glu	caa Gln 90	att Ile	ttt Phe	tta Leu	ttt Phe	cct Pro 95	aat Asn	aat Asn	caa Gln	gat Asp	gat Asp 100	ggc Gly	gat Asp	tta Leu	gaa Glu	342
acc Thr 105	cta Leu	tta Leu	tta Leu	aag Lys	att Ile 110	gct Ala	aac Asn	cac His	aaa Lys	gag Glu 115	ttc Phe	ata Ile	aat Asn	tgt Cys	ttt Phe 120	390
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aaa Lys 185	gat Asp	caa Gln	tat Tyr	aaa Lys	gga Gly 190	gat Asp	tat Tyr	gaa Glu	gaa Glu	cta Leu 195	aaa Lys	aaa Lys	gtt Val	ctt Leu	gat Asp 200	630
ctt Leu	aac Asn	tca Ser	aaa Lys	tct Ser 205	ctt Leu	att Ile	ccc Pro	ctt Leu	aaa Lys 210	aat Asn	ttt Phe	tta Leu	ggg Gly	caa Gln 215	ttt Phe	678
	gaa Glu											taa	tttaa	aca		724
	tata ttcc												gct (gtgaa	aattgt	784 830
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			20					25					30 Ser			
		35					40					45	Phe			
	50					55					60		Ile			
	_1 ~	~ 12					-4.	_				-				

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Lys Lys Glu His Tyr Lys Pro Ile Lys Asn Ile Arg Lys Ser Lys Trp 130 135 140	
Tyr Ala Tyr Leu Glu Ala Leu Gly Leu Glu Lys Phe Phe Gln Tyr Thr 145 150 155 160	
Trp Asp Thr Lys Lys Lys Asn Asn Lys Lys Leu Ile Ile Asp Asp 165 170 175	
Lys Asp Gly Asp Glu Ile Glu Ile Lys Asp Gln Tyr Lys Gly Asp Tyr 180 185 190	
Glu Glu Leu Lys Lys Val Leu Asp Leu Asn Ser Lys Ser Leu Ile Pro 195 200 205	
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100 105 95 atc gtt ttg aat tta gtc aat cgt gct tta gca gcc cct ttg aat atc 446 Ile Val Leu Asn Leu Val Asn Arg Ala Leu Ala Ala Pro Leu Asn Ile 110 115 cat ggc gat cat tct gat atg tat tta agc agg gat tct ggt tgg ata 494 His Gly Asp His Ser Asp Met Tyr Leu Ser Arg Asp Ser Gly Trp Ile 130 agt tta tgc aca tgc aac ccc caa gaa gct tat gat ttc act tta atg 542 Ser Leu Cys Thr Cys Asn Pro Gln Glu Ala Tyr Asp Phe Thr Leu Met 590 gcg ttt aga atc gca gag cat caa aag gtg cgc gtg cct act att gtc Ala Phe Arg Ile Ala Glu His Gln Lys Val Arg Val Pro Thr Ile Val 165 638 aat caa gac ggg ttt tta tgc tcg cac acc gtg caa aat gtc cgc cct Asn Gln Asp Gly Phe Leu Cys Ser His Thr Val Gln Asn Val Arg Pro 180 686 ttg agc gat gca gtg gct tac caa ttc gtg ggc gaa tac caa acc aag Leu Ser Asp Ala Val Ala Tyr Gln Phe Val Gly Glu Tyr Gln Thr Lys 195 734 cat tcc ctt ttg gat ttt gat aaa ccg gta agc tat ggc gcg caa gct His Ser Leu Leu Asp Phe Asp Lys Pro Val Ser Tyr Gly Ala Gln Ala 210 782 qaa qaa qaa tgg cat tat gag cat aaa gcc caa ctc cac cat gcc atc Glu Glu Glu Trp His Tyr Glu His Lys Ala Gln Leu His His Ala Ile 230 830 atg agc gcg tct tct gtg att gaa gaa gtg ttc aat gat ttc gct aaa Met Ser Ala Ser Ser Val Ile Glu Glu Val Phe Asn Asp Phe Ala Lys 245 878 ctc aca ggc agg caa tac cat tta acc aaa act ttc cag cta gaa gac Leu Thr Gly Arg Gln Tyr His Leu Thr Lys Thr Phe Gln Leu Glu Asp 260 926 gct gaa atc gct atc ttt gcg tta ggc act act tat gaa tca gcg atc Ala Glu Ile Ala Ile Phe Ala Leu Gly Thr Thr Tyr Glu Ser Ala Ile . 275 974 gta gcg gct aaa gaa atg cgt aaa aaa ggc att aag gcc ggc gtg gct Val Ala Ala Lys Glu Met Arg Lys Lys Gly Ile Lys Ala Gly Val Ala 290 1022 acc atc cat tcc ttg cgc ccc ttc cct tat gaa aga tta ggg cag gat Thr Ile His Ser Leu Arg Pro Phe Pro Tyr Glu Arg Leu Gly Gln Asp

325

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ggc act atg ggg gcg atg ttt aat gaa gta acg agc gcg gtg tat caa

310

1070

1118

305

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	gaa Glu 365															1214
	aat Asn															1262
	gta Val		_					_	-			taaa	aaagg	gaa		1308
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Asp	Met		Leu	Ser	Arg			Gly	Trp	Ile			Cys	Thr	Cys	
	130 Pro	Gln	Glu	Ala		135 Asp	Phe	Thr	Leu		140 Ala	Phe	Arg	Ile		
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Leu	Cys	Ser		165 Thr	Val	Gln	Asn		170 Arg	Pro	Leu	Ser		175 Ala	Val	
Ala	Tyr	Gln	180 Phe	Val	G1y	Glu	Tyr	185 Gln	Thr	Lys	His	Ser	190 Leu	Leu	Asp	
Phe	Asp	195 Lys	Pro	Val	Ser	Tyr	200 Gly	Ala	Gln	Ala	Glu	205 Glu	Glu	Trp	His	
Tyr	210 Glu	His	Lys	Ala	Gln	215 Leu	His	His	Ala	Ile	220 Met	Ser	Ala	Ser	Ser	
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Thr Lys Val Asp Tyr Thr Phe Phe Asn Lys Lys Val Val Ser Pro Ile
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Phe Asn Lys Ser Gln Ile Ile Phe Ser Asp Ser Leu Ser Pro Val Phe
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                                                                       336
aaa aat tog tat gtg tot aat ggc ott ggc gtg caa gtg ggc tat aag
Lys Asn Ser Tyr Val Ser Asn Gly Leu Gly Val Gln Val Gly Tyr Lys
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                                 105
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ggc ttt ggg a Gly Phe Gly I 225					
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cgc aat tac to Arg Asn Tyr S 275					gatag 865
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Leu Gly Ser Ile Gln His Asn Ser Ser Asn Leu Asn Leu Ser Gln Gln
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Phe Asn Lys Ser Gln Ile Ile Phe Ser Asp Ser Leu Ser Pro Val Phe
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Lys Asn Ser Tyr Val Ser Asn Gly Leu Gly Val Gln Val Gly Tyr Lys
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                                                     110
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Ser Val Ile Ile Ser Thr Tyr Gly Thr Tyr Met Asp Leu Leu Asn
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Ala Tyr Asn Gly Asp Lys Phe Phe Ala Gly Phe Asn Leu Gly Ile Ala
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Phe Ala Gly Val Tyr Asp Lys Val Ser Asp Ala Leu Leu Tyr Gln Ala
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Leu Leu Leu Asp Thr Phe Gly Gly Lys Val Asp Pro Asn Gly Phe Gln
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Phe Leu Val Asn Leu Gly Val Arg Leu Gly Asn Lys His Asn Gln Phe
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Gly Phe Gly Ile Lys Ile Pro Thr Tyr Tyr Phe Asn His Tyr Tyr Ser
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Met Asn Asn Ile Ser Asn Asn Ser Glu Asp Val Leu Lys Val Leu Arg
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Glu Glu Gly Gly Asn Ala Ile Asp Ala Ala Val Ala Ile Gly Phe Ala
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													gat Asp			343	
													gac Asp			391	
													gcg Ala			439	
													aaa Lys			487	
													ttg Leu 165			535	
													aag Lys			583	
													ttt Phe			631	
													caa Gln			679	
													aaa Lys			727	
tat Tyr	caa Gln	ggg Gly	caa Gln 235	gtc Val	gct Ala	gag Glu	ctt Leu	att Ile 240	gag Glu	aaa Lys	gac Asp	atg Met	aaa Lys 245	aaa Lys	aat Asn	775	
													gtg Val			823	
													att Ile			871	
													tta Leu			919	
atg	gaa	aat	gcg	gat	tta	agc	gcc	ctt	ggg	tat	ggg	gct	tct	aag	aat	967	

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acg gt Thr Va 360															1159
gag gg Glu Gl															1207
gca gt Ala Va															1255
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tcc at Ser Il 42	e Lys														1351
gcg aa Ala As 440															1399
acg at Thr Il															1447
gga gg Gly Gl															1495
att ga Ile As															1543
cac at His Me	t Gln														1591
ccc go Pro Al 520															1639

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Pro Ala Ile Lys Leu Ala Glu Asn Gly Tyr Ala Ile Ser Gln Arg Gln
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Ala Glu Thr Leu Lys Glu Ala Arg Glu Arg Phe Leu Lys Tyr Ser Ser
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Ser Lys Lys Tyr Phe Phe Lys Lys Gly His Leu Asp Tyr Gln Glu Gly
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                                                205
Asp Leu Phe Val Gln Lys Asp Leu Ala Lys Thr Leu Asn Gln Ile Lys
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Glu Lys Asp Met Lys Lys Asn Gly Gly Ile Ile Thr Lys Glu Asp Leu
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Gln Ala Tyr Ala Asp Arg Ser Val Tyr Met Gly Asp Ala Asp Phe Val
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330

325

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Pro Gly Met Gly Gln Leu His Glu Gly Ser Asn Thr Thr His Tyr Ser
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Val Ala Asp Arg Trp Gly Asn Ala Val Ser Val Thr Tyr Thr Ile Asn
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                    390
Ala Ser Tyr Gly Ser Ala Ala Ser Ile Asp Gly Ala Gly Phe Leu Leu
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Asn Asn Glu Met Asp Asp Phe Ser Ile Lys Pro Gly Asn Pro Asn Leu
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Tyr Gly Leu Val Gly Gly Asp Ala Asn Ala Ile Glu Ala Asn Lys Arg
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Phe Leu Val Val Gly Ser Pro Gly Gly Ser Arg Ile Ile Thr Thr Val
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Leu Gln Val Ile Ser Asn Val Ile Asp Tyr Asn Met Asn Ile Ser Glu
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Ala Val Ser Ala Pro Arg Phe His Met Gln Trp Leu Pro Asp Glu Leu
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Arg Ile Glu Lys Phe Gly Met Pro Ala Asp Val Lys Asp Asn Leu Thr
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Lys Met Gly Tyr Gln Ile Val Thr Lys Pro Val Met Gly Asp Val Asn
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Ala Leu Ile Glu Tyr Glu Val Arg Glu Gln Gly Ser Ser Ile Val Leu
gac agc aat att tcc aaa gag cct tta gag ttt att ata ggc act aat
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Asp Ser Asn Ile Ser Lys Glu Pro Leu Glu Phe Ile Ile Gly Thr Asn
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caa atc ata gca ggg tta gaa aag gcg gta tta aag gct caa att ggc
Gln Ile Ile Ala Gly Leu Glu Lys Ala Val Leu Lys Ala Gln Ile Gly
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gag tgg gaa gag gtt gtc atc gcc cca gag gaa gct tat ggg gtt tat
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gaa Glu	tta Leu	gaa Glu 95	aaa Lys	Gly ggc	atg Met	agc Ser	gtt Val 100	ttt Phe	Gly	caa Gln	act Thr	gaa Glu 105	gac Asp	aat Asn	caa Gln	35	99
acc Thr	att Ile 110	caa Gln	gcc Ala	att Ile	atc Ile	aaa Lys 115	gac Asp	ttt Phe	agc Ser	gct Ala	acg Thr 120	cat His	gtg Val	atg Met	gtg Val	4.	47
gat Asp 125	tat Tyr	aac Asn	cac His	ccg Pro	tta Leu 130	gcc Ala	ggg Gly	aaa Lys	act Thr	tta Leu 135	gcg Ala	ttt Phe	cgt Arg	ttc Phe	aag Lys 140	4:	95
gtt Val	tta Leu	ggt Gly	ttt Phe	agg Arg 145	gaa Glu	gtg Val	agc Ser	gaa Glu	gaa Glu 150	gaa Glu	att Ile	tta Leu	gct Ala	tca Ser 155	cac His	5.	43
cat His	ggc Gly	ggt Gly	ggg Gly 160	aca Thr	ggt Gly	tgc Cys	tgt Cys	ggc Gly 165	ggt Gly	cat His	Gly	ggt Gly	cat His 170	ggc	gga Gly	5:	91
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Ile	Ile		100 Asp	Phe	Ser	Ala		105 His	Val	Met	Val		110 Tyr		His		
Pro		115 Ala	Gly	Lys	Thr		120 Ala	Phe	Arg	Phe	Lys 140	125 Val	Leu	Gly	Phe		
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Glu Arg Ser Phe Leu Ala Glu Lys Tyr His Lys Ile Pro Thr Asn Lys
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agg aaa ttt aaa gaa cgc tct ata ata tct gtt tgt gaa ata tcc aat
                                                                      144
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cca gta gcg cac aaa ggg ctt aaa agg atc aaa aac cct aac acc att
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Pro Val Ala His Lys Gly Leu Lys Arg Ile Lys Asn Pro Asn Thr Ile
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Leu Thr Thr Asn Ile His Gln Leu Pro Lys Pro Ile Ala Thr Arg Leu
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Phe Asn Ser Ser Ser Asn Thr Gly Ile Cys Ala Cys Asn Cys Ser Phe
age get tge ttt tea ttt tgt aat tge tte gea aac get tea aac tet
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Pro Val Ala His Lys Gly Leu Lys Arg Ile Lys Asn Pro Asn Thr Ile
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65 Phe	Asn	Ser	Ser		70 Asn	Thr	Gly	Ile	Cys 90	75 Ala	Cys	Asn	Cys	Ser 95	80 Phe	
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gaa Glu	cac His	aac Asn 10	act Thr	aac Asn	att Ile	gcc Ala	acc Thr 15	gag Glu	ttt Phe	aga Arg	gcg Ala	ggt Gly 20	tta Leu	acg Thr	acc Thr	102
ttt Phe	atc Ile 25	acc Thr	atg Met	att Ile	tac Tyr	atc Ile 30	gtg Val	ccc Pro	tta Leu	aac Asn	gct Ala 35	ctt Leu	atc Ile	ctt Leu	tct Ser	150
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act Thr	atc Ile	tta Leu	tcg Ser	agc Ser 60	gtg Val	ttt Phe	aac Asn	gga Gly	ttg Leu 65	tgg Trp	gca Ala	aac Asn	acc Thr	cct Pro 70	atc Ile	246
gct Ala	atg Met	agc Ser	gtg Val 75	ggc Gly	tta Leu	Gly ggg	ctg Leu	tca Ser 80	Ala	tat Tyr	ttt Phe	agc Ser	ttc Phe 85	Gly	ttg Leu	294
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cto Leu	tcg Ser 105	gga Gly	gcg Ala	att Ile	ttt Phe	gtg Val 110	att Ile	ttg Leu	tct Ser	ttc Phe	act Thr 115	Lys	ttt Phe	aga Arg	agt Ser	390
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gto	gtt	acc	cat	aar	gct	acg	ctt	gta	acc	tta	ggc	gat:	ttt	ggc	gat	534

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270

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Leu Phe Cys Leu Pro Leu Leu Lys Ala Ile Pro Ser Asn Ala Ile Tyr
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Cys Leu Leu Cys Gly Asp Pro Leu Arg Val Ser Tyr Ile Ala Lys Lys
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225					230)				235)				240	
				245	i				250)				255		
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Val Pro Arg Pro Ser Ile Pro Arg Ala Ala Ser Ser Gln Leu Cys Met 50				2.0					25	Pro	Asn			30			
Val Pro Arg Pro Ser Ile Pro Arg Ala Ala Ser Ser Gln Leu Cys Met 50 Arg Ala Gly Asp Leu Blu Asp Val Gly Tyr Thr Ala 65 Arg His His Thr Leu Phe Gly Asp Leu Gly Asp Phe Gly Asp Arg His His Thr Leu Phe Gly Asp Leu Gly Asp Phe Gly Asp 90 95 96	Phe	Thr	7 02	_ ¬	~1	Met	Va1	Q1	_						~7		
Arg Ala Gly Gly Lys His Asn Asp Leu Glu Asn Val Gly Tyr Thr Ala 65	77≃1			Ala	GTĀ		Val		Phe	Lys	Asp	Ile	Phe 45	Thr	GTA	Ile	
Arg His His Thr Leu Phe Glu Met Leu Gly Asn Phe Ser Phe Gly Asp 85 Tyr Phe Lys Glu Glu Ala Ile Leu Phe Ala Trp Glu Phe Val Thr Lys 100 Asn Leu Gly Phe Lys Pro Lys Asp Leu Tyr Ile Ser Val His Glu Lys 125 Asp Asp Glu Ala Val Lys Leu Trp Glu Lys Phe Val Pro Val Asp Arg 130 Ile Lys Lys Met Gly Asp Lys Asp Asp Asn Phe Trp Gln Met Gly Asp Ser 145 Gly Pro Cys Gly Pro Cys Ser Glu Ile Tyr Ile Asp Gln Gly Glu Lys 165 His Phe Lys Gly Ser Glu Asp Tyr Phe Gly Gly Glu Gly Asp Arg Phe 180 Leu Glu Ile Trp Asn Leu Val Phe Met Gln Tyr Glu Arg Ser Asn Asp 200 Gly Val Leu Ser Pro Leu Pro Lys Pro Ser Ile Asp Thr Gly Met Gly 220	val		35				Pro	40				Ser	45				
Tyr Phe Lys Glu Glu Ala Ile Leu Phe Ala Trp Glu Phe Val Thr Lys		50	35 Arg	Pro	Ser	Ile His	Pro 55	40 Arg	Ala	Ala	Ser Asn	Ser 60	45 Gln	Leu	. Cys	Met Ala	
Asn Leu Gly Phe Lys Pro Lys Asp Leu Tyr Ile Ser Val His Glu Lys 115 Asp Asp Glu Ala Val Lys Leu Trp Glu Lys Phe Val Pro Val Asp Arg 130 Ile Lys Lys Met Gly Asp Lys Asp Asn Phe Trp Gln Met Gly Asp Ser 145 Gly Pro Cys Gly Pro Cys Ser Glu Ile Tyr Ile Asp Gln Gly Glu Lys 165 His Phe Lys Gly Ser Glu Asp Tyr Phe Gly Gly Glu Gly Asp Arg 180 Leu Glu Ile Trp Asn Leu Val Phe Met Gln Tyr Glu Arg Ser Asn Asp 195 Gly Val Leu Ser Pro Leu Pro Lys Pro Ser Ile Asp Thr Gly Met Gly 210	Arg 65	50 Ala	35 Arg Gly	Pro Gly	Ser Lys	Ile His 70	Pro 55 Asn	40 Arg Asp	Ala Leu	Ala Glu Gly	Ser Asn 75	Ser 60 Val	45 Gln Gly	Leu Tyr	Cys Thr	Met Ala 80	
Asp Asp Glu Ala Val Lys Leu Trp Glu Lys Phe Val Pro Val Asp Arg 130 Ile Lys Lys Met Gly Asp Lys Asp Asn Phe Trp Gln Met Gly Asp Ser 145 Gly Pro Cys Gly Pro Cys Ser Glu Ile Tyr Ile Asp Gln Gly Glu Lys 165 His Phe Lys Gly Ser Glu Asp Tyr Phe Gly Gly Glu Gly Asp Arg Phe 180 Leu Glu Ile Trp Asn Leu Val Phe Met Gln Tyr Glu Arg Ser Asn Asp 195 Gly Val Leu Ser Pro Leu Pro Lys Pro Ser Ile Asp Thr Gly Met Gly 210	Arg 65 Arg	50 Ala His	35 Arg Gly His	Pro Gly Thr	Ser Lys Leu 85	Ile His 70 Phe	Pro 55 Asn Glu	40 Arg Asp Met	Ala Leu Leu	Ala Glu Gly 90	Ser Asn 75 Asn	Ser 60 Val Phe	45 Gln Gly Ser	Leu Tyr Phe	Cys Thr Gly 95	Met Ala 80 Asp	
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Gly Pro Cys Gly Pro Cys Ser Glu Ile Tyr Ile Asp Gln Gly Glu Lys 165 His Phe Lys Gly Ser Glu Asp Tyr Phe Gly Gly Glu Gly Asp Arg Phe 180 Leu Glu Ile Trp Asn Leu Val Phe Met Gln Tyr Glu Arg Ser Asn Asp 195 Gly Val Leu Ser Pro Leu Pro Lys Pro Ser Ile Asp Thr Gly Met Gly 210 215	Arg 65 Arg Tyr Asn Asp	50 Ala His Phe Leu Asp	35 Arg Gly His Lys Gly 115 Glu	Pro Gly Thr Glu 100 Phe	Ser Lys Leu 85 Glu Lys Val	Ile His 70 Phe Ala Pro Lys	Pro 55 Asn Glu Ile Lys Leu 135	Asp Met Leu Asp 120	Leu Leu Phe 105 Leu Glu	Ala Glu Gly 90 Ala Tyr	Ser Asn 75 Asn Trp Ile	Ser 60 Val Phe Glu Ser Val	Gly Ser Phe Val 125	Leu Tyr Phe Val 110 His	Cys Thr Gly 95 Thr Glu Glu Asp	Met Ala 80 Asp Lys Lys Arg	
His Phe Lys Gly Ser Glu Asp Tyr Phe Gly Gly Glu Gly Asp Arg Phe 180 Leu Glu Ile Trp Asn Leu Val Phe Met Gln Tyr Glu Arg Ser Asn Asp 195 Gly Val Leu Ser Pro Leu Pro Lys Pro Ser Ile Asp Thr Gly Met Gly 210 215	Arg 65 Arg Tyr Asn Asp Ile	50 Ala His Phe Leu Asp 130 Lys	35 Arg Gly His Lys Gly 115 Glu Lys	Pro Gly Thr Glu 100 Phe Ala	Ser Lys Leu 85 Glu Lys Val	Ile His 70 Phe Ala Pro Lys Asp	Pro 55 Asn Glu Ile Lys Leu 135 Lys	Asp Met Leu Asp 120 Trp Asp	Ala Leu Leu Phe 105 Leu Glu Asn	Ala Glu Gly 90 Ala Tyr Lys	Ser Asn 75 Asn Trp Ile Phe Trp 155	Ser 60 Val Phe Glu Ser Val 140	Gly Ser Phe Val 125 Pro	Tyr Phe Val His	Cys Thr Gly 95 Thr Glu Asp	Met Ala 80 Asp Lys Lys Arg Ser 160	
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Glu	Ser	Lys	Glu 340	Met	Val	Val	Lys	Glu 345	Cys	Phe	Glu	Glu	Glu 350	Glu	His
Phe	Leu	Glu 355	Thr	Leu	Glu	Ser	Gly 360	Met	Glu	Leu	Phe	Asn 365	Leu	Ser	Leu
Lys	His	Leu	Asn	Glu	Asn	Lys 375	Ile	Phe	Asp	Gly	Lys 380	Ile	Ala	Phe	Lys
Leu 385	Tyr	Asp	Thr	Phe	Gly 390	Phe	Pro	Leu	Asp	Leu 395	Thr	Asn	Asp	Met	Leu 400
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Gln	Glu	Gln	Val 420	Lys	Arg	Ser	Lys	Ala 425	Ser	Trp	Lys	Gly	Lys 430	Gln	Asn
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Asp 465	Ser	Asp	Phe	Lys	Glu 470	Ile	Thr	Asp	Ala	Asn 475	Pro	Asn	Gln	Glu	Val 480
Trp	Val	Leu	Leu	Glu 485	Lys	Thr	Pro	Phe	Tyr 490	Ala	Glu	Gly	Gly	Gly 495	Ala
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Ile	Lys 530	Lys	Ala	Leu	Lys	Lys 535	Gly	Asp	Gln	Val	Ile 540	Ala	Gln	Val	Ser
Asp 545	Glu	Arg	Phe	Glu	Ile 550	Ala	Lys	His	His	Ser 555	Ala	Thr	His	Leu	Leu 560
Gln	Ser	Ala	Leu	Arg 565	Glu	Val	Leu	Gly	Ser 570	His	Val	Ser	Gln	Ala 575	Gly
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Ala	Leu	Asn 595	Asp	Glu	Glu	Leu	Glu 600	Lys	Val	Glu	Asp	Leu 605	Val	Asn	Ala
Gln	Ile 610	Phe	Lys	His	Leu	Asn 615	Ser	Gln	Val	Glu	His 620	Met	Pro	Leu	Asn
Gln 625	Ala	Lys	Asp	Lys	Gly 630	Ala	Leu	Ala	Leu	Phe 635	Ser	Glu	Lys	Tyr	Ala 640
Glu	Asn	Val	Arg	Val 645	Val	Ser	Phe	Lys	Glu 650	Ala	Ser	Ile	Glu	Leu 655	Сув
Gly	Gly	Ile	His 660		Glu	Asn	Thr	Gly 665	Leu	Ile	Gly	Gly	Phe 670	Arg	Ile
Val	Lys	Glu 675		Gly	Val	Ser	Ser 680		Val	Arg	Arg	Ile 685		Ala	Val
Cys	Gly 690	Lys	Ala	Phe	Tyr	Gln 695	Leu	Ala	Lys	Glu	Glu 700	Asn	Lys	Glu	Leu

705					710	Leu				715					120	
Asn	Lys	Leu	Lys	Glu 725	Ser	Val	Lys	Asn	Ser 730	Gln	Lys	Ala	Pro	Val 735	Ser	
Met	Asp	Leu	Pro 740	Val	Glu	Lys	Ile	His 745		Val	Asn	Leu	Val 750	Val	Gly	
Val	Val	Glu 755	Gln	Gly	Asp	Ile	Lys 760	Glu	Met	Ile	Asp	Arg 765	Leu	Lys	Ser	
	770	Glu				Ala 775					780					
785					790	Val				795					800	
Trp				805		Gln			810					8T2		
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gca att Ile	cacg gaaa atg Met	400> cca gcg gta Val	165 aaga tagg ggg ggg Gly	aaaa atct cgt Arg 10 gcg Ala	ca c ca t ttg Leu	gaaaa agcg acc Thr	agg Arg ata	a ggg aat Asn ggt	gtg Val 15	gag Glu gcc	atg Met 1 ttg Leu	ttt Phe aaa Lys agc	aat Asn tat Tyr agg	ttg Leu 20 cgt	gtg Val 5 cct Pro	114
gca att Ile ago Ser	<pre>cacg gaaa atg Met ggt Gly aaaa</pre>	400> cca gcg gta Val	165 aagaa tagg ggg Gly gct Ala 25 gac	aaaa atct cgt Arg 10 gcg Ala	ca c ca t ttg Leu gct Ala	gaaaaaagegaace acc Thr aca Thr	agg Arg ata Ile	aat Asn ggt Gly 30	gtg Val 15 tta Leu	gag Glu gcc Ala	atg Met 1 ttg Leu aca Thr	aaa Lys agc Ser	tat Tyr agg Arg 35	ttg Leu 20 cgt Arg	gtg Val 5 cct Pro	114 162
attile ago Ser aaa	cacg gaaa atg Met Gly	400>cca gcg gta Val tcg Ser a caas Gln 40 g ttt	165 aagaa tagga ggg Gly gct Ala 25 gac	cgt Arg 10 gcg Ala ggc Gly	ca c ca t ttg Leu gct Ala acg	gaaaaagcgaagcgaacc acc Thr aca Thr	agg Arg ata Ile ggc Gly 45 gaa Glu	a ggg aat Asn ggt Gly 30 gaa Glu	gtg Val 15 tta Leu gag Glu	gag Glu gcc Ala gtg Val	atg Met 1 ttg Leu aca Thr tgc Cys	aaaa Lys agc Ser ttt Phe tat	tat Tyr agg Arg 35 ata Ile	ttg Leu 20 cgt Arg	ycg Val 5 cct Pro ttt Phe	114 162 210
attile ago Ser aaa Lys	cacg gaaa atg Met ggt Gly a aaa Lys tto	400>cca gcg gta Val tcg ser caas Gln 40 gttt	165 aagaa tagga ggg Gly gct Ala 25 gac Asp	cgt Arg 10 gcg Ala gcGly	ca cca ttg teu gct Ala acc Thr	gaaaaagcgaagcgaacc Thr acaa Thr ctaa Leu gct Alaa gaaaagaa	agg Arg ata Ile ggc Gly 45 gaa Glu	a ggg aat Asn ggt 30 gaa Glu atc	gtg Val 15 tta Leu gag Glu gct Ala	gag Glu gcc Ala gtg Val aac	atg Met 1 ttg Leu aca Thr cys cag Glr 65	aaaa Lys agc Ser ttt Phe 50 tat	tat Tyr agg Arg 35 ata Ile	ttg Leu 20 cgt Arg gat Asp	yal 5 cct Pro ttt Phe gcg Ala	114 162 210 258
attile ago Ser aaa Lys cgt Arg Gly	cacgaaa atgaaa a	400>cca gcg gta Val tcg ser caas Gln 40 gttt	165 aagaa tagga ggg Gly gct Ala 25 gac Asp	cgt Arg 10 gcg Ala gcGly cga Arg	ttg Leu gct Ala acg Thr acg Thr	gaaaaagegaagegaagegaagegaagegaagegaage	agg Arg ata Ile ggc Gly 45 gaa Glu	a ggg aat Asn ggt 30 gaa Glu atc	gtg Val 15 tta Leu gag Glu gct Ala ttg	gag Glu gcc Ala gtg Val aac Asn act Thr	atg Met 1 ttg Leu aca Thr Cys cag Glr 65 tat Tyr ato	aaaa Lys agc Ser ttt Phe 50 tat Tyr Gli	tat Tyr agg Arg 35 ata Ile ttg Leu agt	ttg Leu 20 cgt Arg Asp ser Trr	yal 5 cct Pro ttt Phe gcg Ala Lys atg Met 85 ctcg	114 162 210 258

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cat His	aac Asn 135	gct Ala	ccc Pro	agc Ser	caa Gln	gat Asp 140	cct Pro	ttt Phe	aac Asn	caa Gln	gct Ala 145	tat Tyr	gcg Ala	caa Gln	aac Asn	546
gct Ala 150	tac Tyr	gct Ala	aaa Lys	gag Glu	aat Asn 155	tta Leu	caa Gln	gca Ala	cag Gln	ccg Pro 160	tcc Ser	aag Lys	tat Tyr	caa Gln	aac Asn 165	594
agc Ser	gtg Val	cct Pro	gaa Glu	atc Ile 170	aat Asn	att Ile	gat Asp	gaa Glu	gaa Glu 175	gaa Glu	atc Ile	ccc Pro	ttt Phe			636
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Thr	Ser	Arg 35	Arg	Phe	Lys	Lys	Gln 40	Asp	Gly	Thr	Leu	Gly 45	Glu	G1u	Val	
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Gln	Ala	Asn	100 Ala		G1n	Asp	Ser	105 Ile	Met	His	Glu	Asn	110 Ser		Asn	
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145					150					155					160	
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ccc ata tta ctc cct tta gaa agc cac atc aaa agc gag ttt ttg cat Pro Ile Leu Leu Pro Leu Glu Ser His Ile Lys Ser Glu Phe Leu His 45 50 55	258
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gga ttg gat ttt ttc caa cgc ctg ggc tgt gat tgt ttt atg gag cct Gly Leu Asp Phe Phe Gln Arg Leu Gly Cys Asp Cys Phe Met Glu Pro 155 160 165	594
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gag ggc aag ctc gct tat gat ttg gcg tat ggg ttt tta acg ccc ttt Glu Gly Lys Leu Ala Tyr Asp Leu Ala Tyr Gly Phe Leu Thr Pro Phe	738

210 215 205

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caa Gln	atc Ile 250	cct Pro	tat Tyr	tca Ser	aaa Lys	gcg Ala 255	ttt Phe	gaa Glu	gtc Val	atg Met	cga Arg 260	agt Ser	gtt Val	ttt Phe		879
tga ctc	tgcaa ctcta	agg g	gttt agaa	ttaaq aaggg	ga ag	gcct	gttti	t ttg g aag	acac, aaaa,	ttaa ttga	aaa	gatco gaaa	cct aag	aaac g	cattcg	939 990

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Ser Val Leu Asn Arg Ser Ser Arg Gly Leu Asp Phe Phe Gln Arg Leu

Gly Cys Asp Cys Phe Met Glu Pro Pro Lys Ser Ala Phe Asp Leu Ile

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190 195 185 180 ttt aag cag cct cta gcg ttt gtt ttg ttt ttg atc gca agt tat gcc 679 Phe Lys Gln Pro Leu Ala Phe Val Leu Phe Leu Ile Ala Ser Tyr Ala 205 gaa ttg aat cga acc ccc ttt gac ttg cta gag cat gaa gcc gag atc 727 Glu Leu Asn Arg Thr Pro Phe Asp Leu Leu Glu His Glu Ala Glu Ile 220 gtg gcg ggg tat tgc acc gaa tac agc ggc ttg aaa tgg ggc atg ttc 775 Val Ala Gly Tyr Cys Thr Glu Tyr Ser Gly Leu Lys Trp Gly Met Phe 230 823 ttt tta gcg gaa tac gcg cat tta ttc gct ttt tct ttt gtg att tct Phe Leu Ala Glu Tyr Ala His Leu Phe Ala Phe Ser Phe Val Ile Ser 250 871 att gtg ttt ttt ggc ggg ttt aac gca tgg ggc ttt atc cct gga ggc Ile Val Phe Phe Gly Gly Phe Asn Ala Trp Gly Phe Ile Pro Gly Gly 265 919 ata gcg att ttg att aaa gcg ggc ttt ttt gtc ttt tta tcc atg tgg Ile Ala Ile Leu Ile Lys Ala Gly Phe Phe Val Phe Leu Ser Met Trp 285 gtt aga gcg act tat ccg cat gtg cgc cca gac caa ctg atg gat atg 967 Val Arg Ala Thr Tyr Pro His Val Arg Pro Asp Gln Leu Met Asp Met 300 tgc tgg aaa atc atg ctg cct tta gcg tta ttg aac att gtg cta acg 1015 Cys Trp Lys Ile Met Leu Pro Leu Ala Leu Leu Asn Ile Val Leu Thr 315 310 ggc att atc att tta att taaaggaggt tttatggcca aacaagaata 1063 Gly Ile Ile Leu Ile 325 1080 caagcaactt cctaaac <210> 170 <211> 329 <212> PRT <213> Helicobacter pylori <400> 170 Met Ser Ala Tyr Ile Ile Glu Thr Leu Ile Lys Ile Leu Ile Leu Val 5 10 1 Ala Val Phe Ser Ala Leu Gly Gly Phe Ala Thr Tyr Ile Glu Arg Lys 25 2.0 Val Leu Ala Tyr Phe Gln Arg Arg Leu Gly Pro Cys Tyr Val Gly Pro 40 45 Phe Gly Leu Leu Gln Val Ala Ala Asp Gly Ile Lys Leu Phe Thr Lys 55 60 50 Glu Asp Ile Ile Pro Gln Gly Ala Asn Lys Phe Ile Phe Thr Leu Ala 75 Pro Ile Ile Ala Met Val Ser Ala Phe Val Ser Met Ala Pro Ile Pro 90 Phe Phe Pro Asn Phe Thr Leu Phe Gly Tyr Glu Ile Lys Pro Leu Ile

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cta Leu 260	. Glu	aco ı Thr	aat Asn	aag Lys	cat His 265	Gly	gcg Ala	g act Thr	ttg Leu	aat Asn 270	ı Lys	g gly	g cgt Z Arg	gtg Val	ggg Gly 275	872
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 Ile Ala Ala Leu Leu Ser Asn Leu Leu Phe Asp Pro Arg Gly Arg Asp
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gcg Ala	tta Leu 20	tta Leu	aag Lys	aat Asn	tta Leu	gcg Ala 25	atc Ile	gct Ala	ttg Leu	att Ile	gag Glu 30	cat His	aac Asn	aaa Lys	att Ile	152
gaa Glu 35	Thr	Gly ggg	att Ile	tat Tyr	aag Lys 40	gct Ala	aag Lys	gaa Glu	ttg Leu	cgc Arg 45	agt Ser	tac Tyr	att Ile	gag Glu	aaa Lys 50	200
ttg Leu	acg Thr	aca Thr	gcg Ala	gct Ala 55	cgt Arg	gtg Val	ggc Gly	gat Asp	ttt Phe 60	aat Asn	gcg Ala	cac His	cgc Arg	cat His 65	gtt Val	248
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atc Ile	gcg Ala	ccc Pro 85	aaa Lys	tac Tyr	gcg Ala	caa Gln	agg Arg 90	aat Asn	ggc	gga Gly	tac Tyr	acc Thr 95	agg Arg	atc Ile	caa Gln	344
cgc Arg	acc Thr 100	act Thr	ttt Phe	aga Arg	aga Arg	ggg Gly 105	gac Asp	gct Ala	tcc Ser	act Thr	cta Leu 110	gcc Ala	acc Thr	att Ile	gaa Glu	392
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Lys	Ile	Glu 35	Thr	G1y	Ile	Tyr	Lys 40		Lys	Glu	Leu	Arg 45		Tyr	Ile	
Glu	Lys 50		Thr	Thr	Ala	Ala 55		Val	Gly	Asp	Phe		Ala	His	Arg	
His 65		Phe	Ala	Tyr	Leu 70		Asn	Lys	Glu	Ala 75	~ ~	His	Lys	Leu		
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Ile	Gln	Arg	Thr 100		Phe	Arg	Arg	Gly 105		Ala	Ser	Thr		95 Ala	Thr	
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677

aag ggt aaa acc tat atc ctt aaa gat gaa gaa att gat gcg ata atc

Lys Gly Lys Thr Tyr Ile Leu Lys Asp Glu Glu Ile Asp Ala Ile Ile

205 210 200 725 cct gag ggc att gat gat caa aac cgc atg gtg ctt aaa aat aaa ggc Pro Glu Gly Ile Asp Asp Gln Asn Arg Met Val Leu Lys Asn Lys Gly 220 225 773 aat gaa tac gag aag gga aaa aga ggg gat ttg tat tta gaa gcg caa Asn Glu Tyr Glu Lys Gly Lys Arg Gly Asp Leu Tyr Leu Glu Ala Gln 240 gtc aaa gaa gat gag cat ttc aag cgc gaa ggc tgc gat tta ttc att 821 Val Lys Glu Asp Glu His Phe Lys Arg Glu Gly Cys Asp Leu Phe Ile 255 869 aaa gcg ccg gtg ttt ttc acc act atc gct tta ggg cat acg att aaa Lys Ala Pro Val Phe Phe Thr Thr Ile Ala Leu Gly His Thr Ile Lys 270 917 gtg ccg tct tta aaa ggg gac gaa ctg gaa tta aaa atc cct aga aac Val Pro Ser Leu Lys Gly Asp Glu Leu Glu Leu Lys Ile Pro Arg Asn 285 965 gcc aga gac aag cag act ttt gcg ttt aga aac gag ggc gtg aaa cac Ala Arg Asp Lys Gln Thr Phe Ala Phe Arg Asn Glu Gly Val Lys His 300 305 cct gaa agc tct tat aga ggg agt ttg atc gtg gaa ttg caa gtg att 1013 Pro Glu Ser Ser Tyr Arg Gly Ser Leu Ile Val Glu Leu Gln Val Ile 315 320 1061 tac cct aaa agt ttg aat aaa gag cag caa gaa ttg ttg gaa aaa ttg Tyr Pro Lys Ser Leu Asn Lys Glu Gln Glu Leu Leu Glu Lys Leu 335 1109 cat gcg agt ttt ggc tat gag ggc gag ccg cat aaa agc gtt tta gaa His Ala Ser Phe Gly Tyr Glu Gly Glu Pro His Lys Ser Val Leu Glu 350 acc tgt att tct aaa att aaa gac tgg ttc aaa taaaaggttg ttgatgcatg 1162 Thr Cys Ile Ser Lys Ile Lys Asp Trp Phe Lys 1204 agtttctaaa agcttttaaa gacgctttcc ctcataccat tt <210> 180 <211> 369 <212> PRT <213> Helicobacter pylori <400> 180 Val Glu Leu Ser Tyr Tyr Glu Ile Leu Glu Val Glu Lys His Ser Asn 10 Gln Glu Thr Ile Lys Lys Ser Tyr Arg Lys Leu Ala Leu Lys Tyr His 25 Pro Asp Arg Asn Ala Gly Asp Lys Glu Ala Glu Glu Lys Phe Lys Leu 40 45

60

Ile Asn Glu Ala Tyr Gly Val Leu Ser Asp Glu Lys Lys Arg Ala Leu

Tyr Asp Arg Tyr Gly Lys Lys Gly Leu Asn Gln Ala Gly Ala Ser Gln

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Phe Gly Cys Lys Lys Thr Ile Lys Val Gln Tyr Gln Ser Val Cys Glu
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Ser Cys Asp Gly Thr Gly Ala Lys Asp Lys Ala Leu Glu Thr Cys Lys
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Gln Cys Asn Gly Gln Gly Gln Val Phe Met Arg Gln Gly Phe Met Ser
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Phe Ala Gln Thr Cys Gly Ala Cys Gln Gly Lys Gly Lys Ile Val Lys
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Thr Pro Cys Gln Ala Cys Lys Gly Lys Thr Tyr Ile Leu Lys Asp Glu
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Glu Ile Asp Ala Ile Ile Pro Glu Gly Ile Asp Asp Gln Asn Arg Met
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Val Leu Lys Asn Lys Gly Asn Glu Tyr Glu Lys Gly Lys Arg Gly Asp
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Leu Tyr Leu Glu Ala Gln Val Lys Glu Asp Glu His Phe Lys Arg Glu
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Leu Lys Ile Pro Arg Asn Ala Arg Asp Lys Gln Thr Phe Ala Phe Arg
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                                           300
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Val Glu Leu Gln Val Ile Tyr Pro Lys Ser Leu Asn Lys Glu Gln Gln
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Thr Gln Ile Ala Leu Pro Asn Ser His Pro Leu Leu Lys Lys Val Leu
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gtt Val 110	tta Leu	acc Thr	ttt Phe	ggg	gcg Ala 115	gaa Glu	tat Tyr	gcg Ala	ctt Leu	ttt Phe 120	atc Ile	acc Thr	aaa Lys	cac His	cct Pro 125	386
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tta Leu	gat Asp 175	ttc Phe	atc Ile	tac Tyr	cct Pro	aat Asn 180	ggc Gly	ttt Phe	ggc	aag Lys	gac Asp 185	agc Ser	tac Tyr	acc Thr	act Thr	578
atg Met 190	gct Ala	gaa Glu	Arg	Lys	tta Leu 195	Lys	Glu	Cys	Tyr	Lys	Thr	Leu	Gly	Phe	atc Ile 205	626
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tat Tyr	gcc Ala	aaa Lys 240	Arg	ttc Phe	gct Ala	atc Ile	att Ile 245	Gln	gag Glu	gcg Ala	tat Tyr	cgc Arg 250	His	att Ile	aaa Lys	770
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Lys Lys His Phe Ser Gln Cys His Met Leu Ser Ser Ser Leu Leu Ile
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Leu Asn Asp Thr Glu Cys Phe Lys Lys Asn Tyr Leu Leu Asn Trp Val
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Tyr His Ala Leu Glu Cys Val His Glu Lys Asp Ile Ser Ala His Ser
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Leu Glu Glu Val Leu Gln Lys Ser His Leu Pro Ile Arg Ile Lys Ile
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Val Thr Leu Asn Glu Asn Arg Ile Val His Asn Ala Cys Leu Asp Phe
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Ile Tyr Pro Asn Gly Phe Gly Lys Asp Ser Tyr Thr Thr Met Ala Glu
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Arg Lys Leu Lys Glu Cys Tyr Lys Thr Leu Gly Phe Ile Lys His Glu
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Asp Phe Ser Glu Val Lys Lys Arg Tyr Leu Glu Leu Ala Lys Thr Tyr
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Met Lys Ser Asn Lys Lys Ser Asn Arg Leu Arg Ala Ile Tyr Arg Ala
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tta gtg atc gct ata gga cta gct gtt atc atc gtt ttc aat tac ttt
Leu Val Ile Ala Ile Gly Leu Ala Val Ile Ile Val Phe Asn Tyr Phe
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gga Gly	atg Met	att Ile 115	tta Leu	att Ile	gac Asp	aga Arg	gag Glu 120	gat Asp	aaa Lys	aag Lys	ggg Gly	att Ile 125	gtg Val	agc Ser	ctt Leu	442
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cct Pro	gat Asp 210	Phe	aac Asn	tcg Ser	ccc Pro	acc Thr 215	tgg Trp	tat Tyr	gaa Glu	gaa Glu	tta Leu 220	caa Gln	gaa Glu	cgc Arg	atg Met	730
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Lys	Gln	Gly	Ala	Lys 165	Ile	Ile	Ala	Glu	Lys 170	Phe	Gln	Leu	Lys	Ile 175	Gln	
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Pro	Asp 210	Phe	Asn	Ser	Pro	Thr 215	Trp	Tyr	Glu	Glu	Leu 220	Gln	Glu	Arg	Met	
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Gly aaa	att Ile	gct Ala	act Thr 105	tta Leu	acg Thr	agc Ser	cgt Arg	ttt Phe 110	gta Val	gag Glu	gct Ala	tta Leu	aat Asn 115	tct Ser	cat His	390
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Gly Asp Phe Ser Met Leu Leu Lys Val Glu Arg Thr Leu Leu Asn Leu
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Ala Leu Asn Ser His Lys Val Arg Leu Leu Asp Thr Arg Lys Thr Arg
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Pro Leu Leu Arg Ile Phe Glu Lys Tyr Ser Val Leu Asn Gly Gly Ala
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Ser Asn His Arg Leu Gly Leu Asp Asp Ala Leu Met Leu Lys Asp Thr
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His Leu Arg His Val Lys Asp Leu Lys Ser Phe Leu Thr His Ala Arg
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Lys Asn Leu Pro Phe Thr Ala Lys Ile Glu Ile Glu Cys Glu Ser Phe
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Glu Glu Ala Lys Asn Ala Met Asn Ala Gly Ala Asp Ile Val Met Cys
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Asp Asn Leu Ser Val Leu Glu Thr Lys Glu Ile Ala Ala Tyr Arg Asp
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Ala His Tyr Pro Phe Val Leu Leu Glu Ala Ser Gly Asn Ile Ser Leu
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Glu Ser Ile Asn Ala Tyr Ala Lys Ser Gly Val Asp Ala Ile Ser Val
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ctc Leu	tct Ser	cgc Arg	ctt Leu 70	att Ile	cat His	gat Asp	gaa Glu	atc Ile 75	aat Asn	ttg Leu	gag Glu	tat Tyr	ttg Leu 80	aag Lys	gcg Ala	296
tgc Cys	ggg Gly	ctc Leu 85	aat Asn	ttc Phe	ata Ile	gaa Glu	acg Thr 90	agc Ser	gaa Glu	aat Asn	tta Leu	atc Ile 95	acg Thr	ctc Leu	aaa Lys	344
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gaa Glu 115	acc Thr	acc Thr	gga Gly	tct Ser	tgc Cys 120	ccc Pro	ata Ile	aag Lys	cat His	gag Glu 125	att Ile	tta Leu	gaa Glu	att Ile	ggg Gly 130	440
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gtg Val	aaa Lys	gtc Val	aaa Lys 150	agc Ser	gtg Val	cct Pro	gat Asp	tat Tyr 155	atc Ile	gct Ala	gag Glu	ctt Leu	aca Thr 160	ggc Gly	atc Ile	536
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tct Ser	ctt Leu	ttt Phe	gaa Glu 310	aag Lys	aca Thr	aag Lys	ggc Gly	ttg Leu 315	ttc Phe	aat Asn	cat His	aaa Lys	agc Ser 320	aac Asn	cag Gln	1016
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tct Ser	cta Leu 340	ttt Phe	gat Asp	act Thr	ttt Phe	gaa Glu 345	tgt Cys	tgc Cys	cta Leu	gta Val	ttt Phe 350	tga	tttt	atc		1110
ggt	tacti	cg (cacto	catc	gt a	tatc	tttt	t gta	attc	ttgt	atg					1153
	<; <; <;		350 PRT Hel:	icoba	acte:	r py	lori									
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Lys Arg Ala Ile Leu Ser Met Arg Tyr Ser Leu Ser Phe Leu Lys Glu
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                                        235
Leu Leu Gly Phe Gly Ile Glu Val Ser His Arg Ala Tyr Ala Asp Ala
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Leu Ala Ser Tyr Lys Leu Phe Glu Ile Cys Leu Leu Asn Leu Pro Ser
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Tyr Ile Lys Thr Thr Met Asp Leu Ile Asp Phe Ser Lys Cys Ala Asn
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Thr Leu Ile Lys Arg Pro Pro Lys Ala Arg Tyr Gln Glu Ile Pro Ser
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                                            300
Pro Phe Ser Leu Phe Glu Lys Thr Lys Gly Leu Phe Asn His Lys Ser
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aaa att gaa agc aat gat tcc cac cta aga ggt att tta aaa gac gaa
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Lys Ile Glu Ser Asn Asp Ser His Leu Arg Gly Ile Leu Lys Asp Glu
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ctc tac tat caa atc ccc atc tac caa cgc cct tat caa tgg aca gaa
                                                                      153
Leu Tyr Tyr Gln Ile Pro Ile Tyr Gln Arg Pro Tyr Gln Trp Thr Glu
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gaa aac tgc gaa aaa ctt tta gac gat ttg ttt ttt aat tat gaa gat
                                                                      201
Glu Asn Cys Glu Lys Leu Leu Asp Asp Leu Phe Phe Asn Tyr Glu Asp
 35
gac aga gaa ggc gat tat ttt tgc ggc tca tta gtc tta att gca atc
                                                                      249
Asp Arg Glu Gly Asp Tyr Phe Cys Gly Ser Leu Val Leu Ile Ala Ile
                 55
agc aaa gat tot aaa goo aca acc tat gat gtt gta gat ggo cag caa
                                                                      297
Ser Lys Asp Ser Lys Ala Thr Thr Tyr Asp Val Val Asp Gly Gln Gln
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cgc tta agc act ttc att ctg ctt gca aaa gtt tta gcc gat ctt tat
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Arg Leu Ser Thr Phe Ile Leu Leu Ala Lys Val Leu Ala Asp Leu Tyr
         85
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	aaa Lys 115	gat Asp	agg Arg	cat His	aca Thr	gaa Glu 120	aga Arg	aaa Lys	cga Arg	ctg Leu	agt Ser 125	ttt Phe	aac Asn	act Thr	ata Ile	ggg Gly 130	441
	tct Ser	aac Asn	gct Ala	gaa Glu	tat Tyr 135	gat Asp	ttt Phe	caa Gln	gat Asp	gca Ala 140	tta Leu	gaa Glu	cat His	ttc Phe	aac Asn 145	gac Asp	489
															aaa Lys		537
	gcg Ala	atc Ile	tgt Cys 165	tta Leu	aaa Lys	gac Asp	tat Tyr	ctc Leu 170	atg Met	aaa Lys	aaa Lys	gag Glu	att Ile 175	aaa Lys	aac Asn	att Ile	585
															acc Thr		633
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															gaa Glu 225		729
	tta Leu	aaa Lys	cac His	gct Ala 230	aaa Lys	gag Glu	cat His	gag Glu	cga Arg 235	gaa Glu	gaa Glu	ttt Phe	gtg Val	tct Ser 240	cgt Arg	tgg Trp	777
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Gln Gln Arg Leu Ser Thr Phe Ile Leu Leu Ala Lys Val Leu Ala Asp
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Leu Tyr Asn Asp Cys Leu Asp Pro Lys Asn Leu Glu His Leu Gln Glu
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           100
Gly Trp Lys Asp Arg His Thr Glu Arg Lys Arg Leu Ser Phe Asn Thr
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Ile Gly Ser Asn Ala Glu Tyr Asp Phe Gln Asp Ala Leu Glu His Phe
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                                            140
Asn Asp Ser Gln Ala Ser Lys Asn Lys Asn Asn Lys Asn Asn Tyr Leu
                                        155
                    150
Lys Asn Ala Ile Cys Leu Lys Asp Tyr Leu Met Lys Lys Glu Ile Lys
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                                                        175
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Asn Ile Asn Asp Phe Ile Glu Trp Leu Tyr Ser Asn Val Lys Phe Ile
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                                                    190
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Thr Ile Ile Cys Pro Asn Ile Asp Lys Ala Leu Arg Ile Phe Asn Val
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Leu Asn Ala Arg Gly Leu Pro Leu Asn Ala Thr Asp Ile Phe Lys Gly
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Glu Leu Leu Lys His Ala Lys Glu His Glu Arg Glu Glu Phe Val Ser
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                                                        Met Val
gct ggg ggg cgt gaa gtg gtg ttt aaa gat aat gac aaa aag gaa gcc
                                                                      104
Ala Gly Gly Arg Glu Val Val Phe Lys Asp Asn Asp Lys Lys Glu Ala
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aag ctt ttt gaa tac ggc atc aat gcg gtg gtg cta ggg gac tat ttg
                                                                      152
Lys Leu Phe Glu Tyr Gly Ile Asn Ala Val Val Leu Gly Asp Tyr Leu
     20
                                                                      200
acc acc aaa ggc aaa gcc cct aaa aaa gat ata gaa aaa ctg ctc tct
Thr Thr Lys Gly Lys Ala Pro Lys Lys Asp Ile Glu Lys Leu Leu Ser
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                                                         Trp Trp
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Tyr Asp Asn Asn Val Asn Leu Gln Leu Phe Tyr Gly Phe Leu His Asn
         5
                             10
                                                                      152
gtg tat gaa aat gag aag ttt ttc atc ggt tat ttt ata ggg gct ggg
Val Tyr Glu Asn Glu Lys Phe Phe Ile Gly Tyr Phe Ile Gly Ala Gly
     20
                         25
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cta ggg ggt gag agc gta aca ccc aat gtt ctt aaa gat ttt ggt aat
Leu Gly Gly Glu Ser Val Thr Pro Asn Val Leu Lys Asp Phe Gly Asn
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                     40
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atg tta gcg caa tta gtg caa ttt cag ggc tat ggc tca cta ggg cta
Met Leu Ala Gln Leu Val Gln Phe Gln Gly Tyr Gly Ser Leu Gly Leu
                                                          65
                                                                       296
agg atg ggc gat aaa cac cac acg cta gaa ttg agc acg agc gtt cat
Arg Met Gly Asp Lys His His Thr Leu Glu Leu Ser Thr Ser Val His
ggc gac gct cct agt tgt tct tta aaa aag cta aag agt tgc gaa agt
                                                                       344
Gly Asp Ala Pro Ser Cys Ser Leu Lys Lys Leu Lys Ser Cys Glu Ser
         85
                                                                       392
gcg agg gtt tta caa gca aaa atc cct agg ggc att ttt gaa agc tat
Ala Arg Val Leu Gln Ala Lys Ile Pro Arg Gly Ile Phe Glu Ser Tyr
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110

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Ala Gly Leu Gly Gly Glu Ser Val Thr Pro Asn Val Leu Lys Asp Phe	
35 40 45 Gly Asn Met Leu Ala Gln Leu Val Gln Phe Gln Gly Tyr Gly Ser Leu 50 55 60	
Gly Leu Arg Met Gly Asp Lys His His Thr Leu Glu Leu Ser Thr Ser	
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Lys Lys Pro Asn Asn His His Lys Gln Lys His Ala Lys Thr Arg Asn 65 70 75 80

Tyr Ala Gln Glu Glu Leu Asp Ser Asn Lys Val Glu Gly Val Thr Glu 85 90 95

Ile Leu His Val Asn Glu Arg Gly Thr Leu Gly Phe His Lys Glu Leu

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595

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Asp Asp Phe Phe Ser Asp Lys Thr Pro Lys Ser Leu Gln Glu Ile Leu
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Lys Asp Lys Glu Lys Arg Lys Lys Leu Ile Ile Tyr Ile Asn Pro Pro
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Tyr Ala Glu Ala Gly Asn Lys Ser Lys Met Ser Gly Thr Gly Glu His
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Lys Ala Lys Val Ala Arg Asp Asn Leu Ile Cys Glu Lys Tyr Lys Asn
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Glu Leu Gly Lys Ala Asn Asn Glu Val Phe Ala Gln Phe Phe Met Arg
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Ile Tyr Lys Glu Leu Asn Gly Val Ile Leu Ala Ser Phe Ser Thr Leu
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Lys Asn Leu Gln Gly Ser Asn Phe Lys Lys Phe Arg Glu Ile Phe Lys
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Ala Lys Phe Leu Glu Gly Phe Met Val Pro Ala Asp Thr Phe Asp Asn
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Ile Leu Pro Lys Glu Asn Pro Leu Asn Leu Gly Gly Asn Ser Lys Glu
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Glu Lys Gln Asn Ser Asn Leu Ile Leu Asp Gln Asp Asn Leu Lys Asp
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Asn Pro Leu Lys Glu Arg Phe Cys Leu Leu Asp Ile Asn Ala Pro Asn
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Arg Lys Met Cys Ser Gln Ser Arg Thr Arg Thr Lys Gly Thr Gln Lys
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His Ser Thr Ala Ala Pro Phe Glu Thr Pro Leu His Thr Val Ser Leu
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Thr His Thr Ile Asp Lys Met Leu Thr Leu Ala Asp Tyr Leu Gln Lys
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Lys Ser Lys Gln Ser His Val Lys Tyr Phe Pro Ile Ile Ala Thr Thr
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Ile	Pro	Phe 755	Ser	Glu	Thr	Glu	Val 760	Asn	Ala	Lys	Glu	Arg 765	Tyr	Ser	Ser	
His	Ala 770	Leu	Leu	Glu	Phe	Leu 775	Lys	G1y	Glu	Ile	Lys 780	Glu	Leu	Lys	Glu	
Asn 785	Asp	Ser	Leu	Phe	Leu 790	Ser	Ala	Lys	Lys	Glu 795	Asn	Lys	Pro	Leu	Lys 800	
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		Tyr	820					825					830			
		Leu 835					840					845				
	850	Leu				855					860					
Leu 865	Tyr	Ala	Asn	Leu	Gln 870	Asp	Ala	Leu	Lys	Asp 875	Leu	Ala	Lys	Glu	Ile 880	
Gln	Pro	Lys	Val	Tyr 885	Glu	Tyr	Gly	Phe	Leu 890	Arg	Glu					
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			1	cu o.	Lu II		5	ou b	, 5 1.			10	-9	- I	1-	
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gaa Glu	aac Asn 80	ttt Phe	aac Asn	gag Glu	tta Leu	ttg Leu 85	att Ile	gaa Glu	gtc Val	att Ile	tta Leu 90	acg Thr	cat His	aaa Lys	aaa Lys	351

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cct f	tat Tyr	ttt Phe 145	tat Tyr	gcg Ala	cct Pro	tgc Cys	gac Asp 150	aat Asn	caa Gln	gtt Val	ttg Leu	cat His 155	gaa Glu	aaa Lys	gaa Glu	543
gtt f Val I	tta Leu 160	gaa Glu	atc Ile	att Ile	aaa Lys	aac Asn 165	ctg Leu	gaa Glu	tta Leu	aag Lys	cac His 170	aaa Lys	gtg Val	agt Ser	gca Ala	591
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ccc Pro	gca Ala	ttc Phe	att Ile 210	ggg	gct Ala	aat Asn	cct Pro	tac Tyr 215	cag Gln	caa Gln	gcg Ala	ttt Phe	gaa Glu 220	agg Arg	ggc Gly	735
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Gln Glu Glu Gln Ser Leu Lys Thr Ala Leu Phe Lys Ala Leu Glu Asn
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Phe Asn Glu Leu Leu Ile Glu Val Ile Leu Thr His Lys Lys Asn Ile
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Ile Leu Leu Ala Thr Lys Glu Ser His Cys Leu Gly Asp Leu Leu
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Arg Val Tyr Gly Gly Glu Leu Asn Ala Gln Ile Leu Gly Val Ile Ser
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Asn His Glu Ile Leu Arg Pro Leu Val Glu Lys Phe Asp Ile Pro Tyr
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Phe Tyr Ala Pro Cys Asp Asn Gln Val Leu His Glu Lys Glu Val Leu
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Glu Ile Ile Lys Asn Leu Glu Leu Lys His Lys Val Ser Ala Asp Leu
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Leu Val Leu Ala Lys Tyr Met Arg Ile Leu Ser His Asp Phe Thr Lys
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Arg Tyr Glu Asn Gln Ile Leu Asn Ile His His Ser Phe Leu Pro Ala
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Pro Ile Ile Ile Gln Asp Thr Leu Pro Ile Asn His Asn Tyr Ser Val
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                                                                      104
Trp His Lys Arg Leu Ala Val Gly Cys Cys Ile Val Leu Phe Ser Cys
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Met Met Asn Ala Asn Ser Ile Gln Ile Val Arg Asp Asp Pro Pro Leu
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tat Tyr	ttt Phe	agc Ser	gat Asp 55	Gly ggg	act Thr	tat Tyr	aaa Lys	gaa Glu 60	ggc Gly	tat Tyr	gcg Ala	act Thr	ttg Leu 65	ctc Leu	aaa Lys	248
aac Asn	Gly ggg	cgt Arg 70	tat Tyr	atc Ile	gct Ala	tct Ser	tct Ser 75	gaa Glu	acg Thr	ctt Leu	tat Tyr	tct Ser 80	aac Asn	ggc Gly	tta Leu	296
tac Tyr	cct Pro 85	aaa Lys	acg Thr	att Ile	tta Leu	gcc Ala 90	aaa Lys	atg Met	caa Gln	gac Asp	agc Ser 95	agc Ser	gct Ala	aaa Lys	gag Glu	344
ctg Leu 100	att Ile	tgt Cys	ata Ile	gct Ala	agc Ser 105	cta Leu	cgc Arg	ctt Leu	gaa Glu	gcg Ala 110	atg Met	gat Asp	agg Arg	aat Asn	caa Gln 115	392
Gly	ctt Leu	tcg Ser	ctt Leu	tta Leu 120	aaa Lys	acc Thr	gcc Ala	gat Asp	ttt Phe 125	aga Arg	gac Asp	gat Asp	tat Tyr	tgc Cys 130	cat His	440
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caa Gln	act Thr	ttt Phe 150	cat His	tca Ser	aat Asn	ccc Pro	tat Tyr 155	acc Thr	aat Asn	caa Gln	aaa Lys	aca Thr 160	ccc Pro	aat Asn	tct Ser	536
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cct Pro	tat Tyr	ttt Phe	agc Ser 215	gaa Glu	gtg Val	Gly aaa	gag Glu	ttt Phe 220	atg Met	Gly	atg Met	gct Ala	agc Ser 225	agc Ser	act Thr	728
tta Leu	gaa Glu	aac Asn 230	Gln	gaa Glu	agt Ser	ctg Leu	gtg Val 235	att Ile	atc Ile	cct Pro	aaa Lys	gaa Glu 240	aag Lys	atc Ile	gtg Val	776
caa Gln	ttt Phe 245	Leu	aac Asn	gct Ala	cta Leu	aaa Lys 250	aat Asn	caa Gln	aat Asn	att Ile	ttc Phe 255	cca Pro	aac Asn	att Ile	ccc Pro	824
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Pro Pro Leu Asp Pro Thr Leu Pro Ala Trp Val Tyr Ser Val Ala Leu
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Leu Lys Val Tyr Phe Ser Asp Gly Thr Tyr Lys Glu Gly Tyr Ala Thr
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Leu Leu Lys Asn Gly Arg Tyr Ile Ala Ser Ser Glu Thr Leu Tyr Ser
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                   70
Asn Gly Leu Tyr Pro Lys Thr Ile Leu Ala Lys Met Gln Asp Ser Ser
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Ala Lys Glu Leu Ile Cys Ile Ala Ser Leu Arg Leu Glu Ala Met Asp
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Arg Asn Gln Gly Leu Ser Leu Leu Lys Thr Ala Asp Phe Arg Asp Asp
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Tyr Cys His Lys Arg Glu Glu Ser Tyr Tyr His Ala Arg Ile Tyr Thr
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Lys Tyr Ala Gln Thr Phe His Ser Asn Pro Tyr Thr Asn Gln Lys Thr
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Pro Asn Ser Asp Leu Tyr Tyr Pro Ala Leu Asn Glu Gly Asn Ser Phe
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                                  170
Ser Ile Gln Ile Met Gly Ile Ser Val Ala Glu Leu Leu Lys Ser Lys
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Lys Phe Leu Ser Leu Asp Val Ser Phe Lys Lys Gly Ser Val Leu Trp
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Gly Gly Arg Pro Tyr Phe Ser Glu Val Gly Glu Phe Met Gly Met Ala
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Ser Ser Thr Leu Glu Asn Gln Glu Ser Leu Val Ile Ile Pro Lys Glu
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Asp Trp His Ile Gln Lys Val Glu Met Asn His Gln Val Tyr Asp Ile
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gat tcc tct cta aat acc gct ttg cct gaa gat aaa aca gcg att Asp Ser Ser Leu Asn Thr Ala Leu Pro Glu Asp Lys Thr Ala Ile 45 50 55	gaa 258 Glu
gcc aaa gag caa gag caa aaa gaa aaa aga aaa cgc tgg tat gag Ala Lys Glu Gln Glu Gln Lys Glu Lys Arg Lys Arg Trp Tyr Glu 60 65 70	ctt 306 Leu
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gat caa aaa gaa aat cgt att tat ggc aaa ggc tat tgc aac cgg Asp Gln Lys Glu Asn Arg Ile Tyr Gly Lys Gly Tyr Cys Asn Arg 90 95 100	tat 402 Tyr 105
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35 40 45 Leu Pro Glu Asp Lys Thr Ala Ile Glu Ala Lys Glu Gln Glu Gln	
50 55 60 Glu Lys Arg Lys Arg Trp Tyr Glu Leu Phe Lys Lys Pro Lys	
65 70 75	80

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                                                     110
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Cys Lys Asp Glu His Leu Met Ala Phe Glu Leu Glu Phe Met Glu Asn
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                                                                       154
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Glu Ser Tyr Gly Asp Lys Asn Leu Phe Thr Leu Ile Ser Ile Ser Pro
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					gcg Ala											771
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Glu 225		Gly	Tyr	Thr	Leu 230		Ala	Asp	Val	Arg 235		Val	Tyr	Ala	Phe 240	
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gac act ttc act gtg ttt tat caa aaa caa cct tat ttt aca ggc aat Asp Thr Phe Thr Val Phe Tyr Gln Lys Gln Pro Tyr Phe Thr Gly Asn 35 40 45	327
aag gtt aaa att tta aaa cca aaa ttt gct ttc aaa agc cct aaa att Lys Val Lys Ile Leu Lys Pro Lys Phe Ala Phe Lys Ser Pro Lys Ile 50 55 60	375
tta cat tct ata agc gcg att tta caa ttt att tta aaa ccc tta act Leu His Ser Ile Ser Ala Ile Leu Gln Phe Ile Leu Lys Pro Leu Thr 65 70 75	423
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gct aca ggg cta gaa aac acc acc ctt tct aac gat gaa gaa aac gcc Ala Thr Gly Leu Glu Asn Thr Thr Leu Ser Asn Asp Glu Glu Asn Ala 145 150 155	663
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aaa acc tta agc ttt aat aaa gac gct tta acg caa gga gaa gat tat	807

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gga Gly	ttt Phe	gtc Val 225	aat Asn	gca Ala	gaa Glu	aat Asn	tta Leu 230	aac Asn	cca Pro	cca Pro	ttt Phe	act Thr 235	tgg Trp	agt Ser	tta Leu	903
Glà aaa	ctt Leu 240	ttg Leu	caa Gln	atg Met	gat Asp	ttt Phe 245	ttc Phe	tat Tyr	cgt Arg	aaa Lys	aag Lys 250	tca Ser	tgg Trp	tat Tyr	gcg Ala	951
gga Gly 255	caa Gln	ttc Phe	atg Met	cga Arg	aaa Lys 260	atc Ile	aca Thr	cca Pro	aaa Lys	act Thr 265	gaa Glu	att Ile	gaa Glu	aat Asn	aaa Lys 270	999
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aaa Lys	cgc Arg	cct Pro	tta Leu 290	tta Leu	agc Ser	gta Val	ttg Leu	gtt Val 295	aga Arg	gat Asp	att Ile	gat Asp	aaa Lys 300	act Thr	ttt Phe	1095
agg Arg	gag Glu	caa Gln 305	aaa Lys	atc Ile	caa Gln	cta Leu	ccc Pro 310	cta Leu	aaa Lys	ccc Pro	acc Thr	gct Ala 315	aaa Lys	act Thr	caa Gln	1143
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ata Ile	caa Gln	Ala	Thr	Lys	Glu	Val	Ile	Ser	Gln	Glu	Ala	ccc Pro	gtt Val	caa Gln 365	aaa Lys	1287
		tta Leu			aagg	ggt	ttta	agcg	cg c	tagc	ttgt	g tt	acaa	taaa		1339
ctt	aaaa	ttc	gctt	g												1354
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Leu Gly Ser Thr Thr Glu Ser Ile Ala Glu Phe Lys Phe Ser Leu Pro
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Phe Met Glu Lys Phe Ile Ala Glu Leu Glu Gln Cys Arg Leu Ala Glu
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Val Asn Ala Glu Asn Leu Asn Pro Pro Phe Thr Trp Ser Leu Gly Leu
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Leu Gln Met Asp Phe Phe Tyr Arg Lys Lys Ser Trp Tyr Ala Gly Gln
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Leu Arg Ile Ala Asn Tyr Phe Thr Thr Leu Leu Asn Ala Leu Lys Arg
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Lys Gln Thr Ile Gln Gly Val Ala Gln Tyr Cys Asp Ala Lys Ile Gln
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60

120 175

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gat Asp	gat Asp	cat His	ttt Phe	cct Pro 25	aac Asn	gat Asp	ttg Leu	att Ile	gaa Glu 30	atc Ile	atg Met	cat His	ttt Phe	ggg Gly 35	ggt Gly	271
aaa Lys	aat Asn	aga Arg	gcg Ala 40	cga Arg	aag Lys	caa Gln	atc Ile	cct Pro 45	aat Asn	atg Met	cac His	cat His	gcc Ala 50	gat Asp	aat Asn	319
gtt Val	atc Ile	ctt Leu 55	aga Arg	acc Thr	ctt Leu	gca Ala	ata Ile 60	agg Arg	gta Val	gcg Ala	cgt Arg	gaa Glu 65	atg Met	gcc Ala	ttt Phe	367
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His	Phe	Gly 35		Lys	Asn	Arg	Ala 40		Lys	Gln	Ile	Pro 45		Met	His	
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gac Asp	ttt Phe 20	Leu	aag Lys	ctc Leu	att Ile	aat Asn 25	Lys	Gly	gct Ala	att Ile	tgc Cys 30	Gly	gca Ala	acg Thr	agt Ser	152

aac Asn 35	cct Pro	agt Ser	ttg Leu	ttt Phe	tgc Cys 40	gaa Glu	gcg Ala	atc Ile	aca Thr	aaa Lys 45	agc Ser	gcg Ala	ttt Phe	tat Tyr	aaa Lys 50	20	0
gat Asp	gaa Glu	atc Ile	gct Ala	aaa Lys 55	ctc Leu	aaa Lys	ggc Gly	aaa Lys	aaa Lys 60	gct Ala	aaa Lys	gaa Glu	att Ile	tat Tyr 65	gaa Glu	24	.8
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att Ile	aat Asn	cag Gln	cat His	gcc Ala 215	aat Asn	aag Lys	cta Leu	aca Thr	agc Ser 220	acc Thr	ctt Leu	ttt Phe	gca Ala	tcc Ser 225	aca Thr	72	28
ggc Gly	gtt Val	aaa Lys	tcc Ser 230	aat Asn	tct Ser	tta Leu	gct Ala	aaa Lys 235	gat Asp	tac Tyr	tac Tyr	att Ile	aaa Lys 240	gcg Ala	ctg Leu	75	76
tgt Cys	ttt Phe	aaa Lys 245	aac Asn	tct Ser	atc Ile	aat Asn	aca Thr 250	gcc Ala	cct Pro	cta Leu	gag Glu	gct Ala 255	tta Leu	aac Asn	gct Ala	82	24
tat Tyr	ttg Leu	ctt Leu	gac Asp	cca Pro	aac Asn	acc Thr	gag Glu	tgt Cys	caa Gln	acc Thr	cct Pro	tta Leu	aag Lys	act Thr	aca Thr	8	72

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Met Gln Glu Phe Ser Leu Trp Cys Asp Phe Ile Glu Arg Asp Phe Leu

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											caa Gln					105
											ttg Leu					153
tta Leu	gat Asp 35	att Ile	tct Ser	aaa Lys	aaa Lys	ggt Gly 40	tcg Ser	gta Val	att Ile	tta Leu	ggc Gly 45	gct Ala	ctt Leu	ttg Leu	agt Ser	201
tcg Ser 50	tta Leu	tgg Trp	ctg Leu	aca Thr	aac Asn 55	ccc Pro	tta Leu	aat Asn	gcc Ala	cat His 60	gaa Glu	aag Lys	aat Asn	ggc Gly	gcg Ala 65	249
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											ttt Phe					345
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Lys	His	Phe	Ile 165	Gly	Lys	Lys	Arg	Trp 170	Phe	Gly	Leu	Arg	Tyr 175	Tyr	Gly	
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					ccg Pro											921
					gga Gly 295											969
					aat Asn											1017
				Phe	ggc Gly	Ile	Lys	Ile	Pro		Leu	Pro				1065
					acc Thr											1113
					act Thr											1161
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                                        140
Ile Pro Gly Arg Asn Gln Pro Met Tyr Gly Leu Gly Val Met Thr Gly
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                 150
Tyr Lys His Phe Ile Gly Lys Lys Arg Trp Phe Gly Leu Arg Tyr Tyr
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Gly Phe Phe Asp Tyr Gly His Thr Asn Phe Ser Asn Ser Arg Ala Ala
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Asn Ala Ile Ser Pro Phe Tyr Leu Ser Asp Gln Lys Ala Asp Met Tyr
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Thr Tyr Gly Phe Gly Thr Asp Met Leu Phe Asn Ile Ile Asp Lys Pro
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Lys Ala Thr Ala Gly Phe Phe Leu Gly Val Asn Phe Ala Gly Asn Thr
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Ile Phe Gln Phe Leu Val Asn Val Gly Ile Arg Thr Asn Ile Phe Glu
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His His Gly Ile Glu Phe Gly Ile Lys Ile Pro Thr Leu Pro Asn Tyr
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Phe Phe Lys Gly Ser Thr Thr Ile Arg Ala Lys Lys Gln Gly Pro Leu
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Glu Asn Gly Gln Pro Thr Thr Ile Thr Gly Ala Glu Thr Asn Phe Ser
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	ctt ttg gtg ctt ttt tct tta tcg tgt aag ttt ttg ggc Leu Leu Val Leu Phe Ser Leu Ser Cys Lys Phe Leu Gly 105 110 115	391
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Ile	Thr 50	Gln	Arg	Ala	Ile	Lys 55	Ile	Met	Pro	Leu	Cys 60	Val	Leu	Gly	Leu	
Val 65		Thr	Gly	Gly	Met 70	Met	Leu	Ser	Gln	Tyr 75	Met	Gly	Gly	Asp	Lys 80	
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3101

375

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		755	5				760					765	•		Ser Lys
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Glu Ala Lys Asp Leu Asp Glu Ala Ile Glu Ile Ala Asn Ser Thr Gly
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Tyr Gly Leu Thr Ser Ala Leu Glu Ser Leu Asp Glu Arg Glu Trp Glu
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Lys Leu Met Ala Pro Phe Tyr Pro Lys Asp Asp Leu Ala Glu Ile Met
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tta Leu	gat Asp	ccc Pro 180	aaa Lys	acc Thr	acc Thr	gac Asp	tta Leu 185	aat Asn	aac Asn	atg Met	tgc Cys	atg Met 190	ttt Phe	gat Asp	ggc Gly	636
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tct Ser 210	ggt Gly	gtg Val	cga Arg	gaa Glu	tgc Cys 215	Ile	gaa Glu	gaa Glu	agc Ser	gaa Glu 220	ggg	gtg Val	gat Asp	Gly aaa	gca Ala 225	732
gtg Val	agt Ser	gaa Glu	acc Thr	gct Ala 230	Ser	tct Ser	cat His	tta Leu	tgc Cys 235	Val	aaa Lys	gct Ala	tta Leu	gcg Ala 240	aaa Lys	780
ggo	tca Ser	gaa Glu	ccc Pro 245	Leu	ttg Leu	cat His	tta Leu	aga Arg 250	r Glu	aaa Lys	ato Ile	gct Ala	cgc Arg 255	Leu	gtt Val	828
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Pro Leu Ile Pro Phe Glu Asn Ala His Phe Lys Gly Asn Thr Thr Ile
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Gly Tyr Thr His Tyr Leu Asn Leu Val Leu Val Asn Cys Pro Ile Glu
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Leu Ser Gly Val Arg Glu Cys Ile Glu Glu Ser Glu Gly Val Asp Gly
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Lys Ile Ser Arg Lys Glu Tyr Val Ser Met Tyr Gly Pro Thr Thr Gly
gat aaa gtg aga ttg ggc gat aca gac ttg atc gct gaa gta gaa cat
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Asp Lys Val Arg Leu Gly Asp Thr Asp Leu Ile Ala Glu Val Glu His
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gat Asp	cta Leu	atc Ile	atc Ile 70	act Thr	aac Asn	gct Ala	tta Leu	atc Ile 75	gtg Val	gat Asp	tac Tyr	acc Thr	ggt Gly 80	att Ile	tat Tyr	296
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ggc	ggt Gly 100	aac Asn	aaa Lys	gac Asp	atg Met	caa Gln 105	gat Asp	ggc Gly	gtt Val	aaa Lys	aac Asn 110	aat Asn	ctt Leu	agc Ser	gta Val	392
ggt Gly 115	cct Pro	gct Ala	act Thr	gaa Glu	gcc Ala 120	tta Leu	gcc Ala	ggt Gly	gaa Glu	ggt Gly 125	ttg Leu	atc Ile	gta Val	act Thr	gct Ala 130	440
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gaa Glu	gac Asp 260	Thr	atg Met	gca Ala	gct Ala	att Ile 265	Ala	gga Gly	. cgc . Arg	act Thr	atg Met 270	His	act Thr	ttc Phe	cac His	872

act Thr 275	gaa Glu	ggt Gly	gct Ala	ggc Gly	ggc Gly 280	gga Gly	cac His	gct Ala	cct Pro	gat Asp 285	att Ile	att Ile	aaa Lys	gta Val	gct Ala 290		920
ggt Gly	gaa Glu	cac His	aac Asn	att Ile 295	ctt Leu	ccc Pro	gct Ala	tcc Ser	act Thr 300	aac Asn	ccc Pro	act Thr	atc Ile	cct Pro 305	ttc Phe		968
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Cys His His Leu Asp Lys Ser Ile Lys Glu Asp Val Gln Phe Ala Asp
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Ser Arg Ile Arg Pro Gln Thr Ile Ala Ala Glu Asp Thr Leu His Asp
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Val Gly Glu Val Ile Thr Arg Thr Trp Gln Thr Ala Asp Lys Asn Lys
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Lys Glu Phe Gly Arg Leu Lys Glu Glu Lys Gly Asp Asn Asp Asn Phe
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Arg Ile Lys Arg Tyr Leu Ser Lys Tyr Thr Ile Asn Pro Ala Ile Ala
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Ile Ile Lys Gly Gly Phe Ile Ala Leu Ser Gln Met Gly Asp Ala Asn
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Ala Ser Ile Pro Thr Pro Gln Pro Val Tyr Tyr Arg Glu Met Phe Ala
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His His Gly Lys Ala Lys Tyr Asp Ala Asn Ile Thr Phe Val Ser Gln
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tct Ser	acc Thr	aca Thr	ggc Gly 230	att Ile	gcg Ala	gct Ala	aat Asn	ctt Leu 235	ttg Leu	aag Lys	agg Arg	gaa Glu	ttt Phe 240	att Ile	ggc Gly	776
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tcg Ser 115	ctc Leu	ttt Phe	tat Tyr	gag Glu	cca Pro 120	aaa Lys	gtc Val	cag Gln	caa Gln	gcc Ala 125	tta Leu	aag Lys	gaa Glu	ttt Phe	gac Asp 130	440
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gtg Val	gat Asp	aaa Lys	ccc Pro 150	tat Tyr	tct Ser	aaa Lys	gac Asp	att Ile 155	aat Asn	aag Lys	att Ile	tta Leu	gag Glu 160	Gly	att Ile	536
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165 170 175

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Gly Ile Leu Arg Phe Ser Gln Ile Tyr Gln Gly Gln Leu Val Ala Glu
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Val Gly Gly Phe Phe Thr Lys Ile Ala Lys Arg Val Arg Gly Leu Val
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Lys Lys His Pro Lys Lys Ser Ser Ala Ala Leu Val Val Leu Thr His
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					ata Ile											497
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					aga Arg 175											641
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cca Pro	aac Asn	tct Ser	aaa Lys	caa Gln 270	cct Pro	cat His	tct Ser	caa Gln	aga Arg 275	gga Gly	tca Ser	aaa Lys	gcg Ala	caa Gln 280	gag Glu	929
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		gat Asp														1169
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		gtt Val 380														1265
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His Asn Gln Phe Phe Ile Lys Lys Leu Gly Ile Lys Gly Gly Ile Ala
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Thr Glu Pro Ile Tyr Phe Asp Asp Ser Pro Leu Ala Leu Glu Val Ile
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		act Thr															440
		aag Lys															488
		caa Gln					-	-	_	_	_		_				536
		acc Thr 165															584
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		gct Ala															680
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		tta Leu															872
		agc Ser															920
		atg Met															968
		aac Asn														-	1016

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	_			-				_		gaa Glu					1544
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								_	-	cga Arg		_	_	_	1736

				att Ile											1784
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170

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		aag Lys		_	_		_			-	_		_	-	776

230 235 240 att aaa gag cgt ttg cct aaa ctt tta caa ggg gtg ttg gaa gaa aaa 824 Ile Lys Glu Arg Leu Pro Lys Leu Cln Gly Val Leu Glu Glu Lys 245 872 cgc cat att tta tgg agc att gat ccc atg cat ggc aac acg gtt aaa Arg His Ile Leu Trp Ser Ile Asp Pro Met His Gly Asn Thr Val Lys 265 acc agc ttg ggg gtt aaa aca agg gct ttt gat agc gtg tta gat gaa 920 Thr Ser Leu Gly Val Lys Thr Arg Ala Phe Asp Ser Val Leu Asp Glu 280 285 968 gtg aaa agc ttt ttt gaa atc cat agg gct gaa ggg agt ttg gct tca Val Lys Ser Phe Phe Glu Ile His Arg Ala Glu Gly Ser Leu Ala Ser 300 ggg gtt cat ttg gaa atg aca ggt gag aat gtt aca gaa tgt atc ggt 1016 Gly Val His Leu Glu Met Thr Gly Glu Asn Val Thr Glu Cys Ile Gly 315 ggc tcg caa gcg atc acc gaa gag ggt ttg agc tgc cat tac tac acg 1064 Gly Ser Gln Ala Ile Thr Glu Glu Gly Leu Ser Cys His Tyr Tyr Thr 330 caa tgc gat cca aga tta aac gcc acc caa gcc cta gaa ctc gcc ttc 1112 Gln Cys Asp Pro Arg Leu Asn Ala Thr Gln Ala Leu Glu Leu Ala Phe 345 tta atc gct gac atg ctc aaa aaa cag cac gct tagttaaaaa gagattaatc 1165 Leu Ile Ala Asp Met Leu Lys Lys Gln His Ala tttttttaac tcttttactt tataattatc gtt 1198 <210> 264 <211> 365 <212> PRT <213> Helicobacter pylori <400> 264 Met Phe Lys Val Met Met Gln Met Ala Ile Val Leu Thr Phe Ala Gly 10 Ser Ile Pro Ile Val Lys Val Gly Arg Ile Ala Gly Gln Phe Ala Lys 20 25 Pro Arg Ser Asn Ala Thr Glu Met Leu Asp Asn Glu Glu Val Leu Ser 35 40 Tyr Arg Gly Asp Ile Ile Asn Gly Ile Ser Lys Lys Glu Arg Glu Pro 55 Asn Pro Glu Arg Met Leu Lys Ala Tyr His Gln Ser Val Ala Thr Leu 70 75 Asn Leu Ile Arg Ala Phe Ala Gln Gly Gly Leu Ala Asp Leu Glu Gln 85 Val His Arg Phe Asn Leu Asp Phe Val Lys Asn Asn Asp Phe Gly Gln 100 105 Lys Tyr Gln Gln Ile Ala Asp Arg Ile Thr Gln Ala Leu Gly Phe Met 120

Arg Ala Cys Gly Val Glu Ile Glu Arg Thr Pro Ile Leu Arg Glu Val

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130
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Glu Phe Tyr Thr Ser His Glu Ala Leu Leu Leu His Tyr Glu Glu Pro
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Leu Val Arg Lys Asp Ser Leu Thr Asn Gln Phe Tyr Asp Cys Ser Ala
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His Met Leu Trp Ile Gly Glu Arg Thr Arg Asp Pro Lys Gly Ala His
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Val Glu Phe Leu Arg Gly Val Cys Asn Pro Ile Gly Val Lys Ile Gly
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Pro Asn Ala Ser Val Ser Glu Val Leu Glu Leu Cys Asp Val Leu Asn
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                                           220
Pro Arg Asn Ile Lys Gly Arg Leu Asn Leu Ile Val Arg Met Gly Ser
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                                       235
Lys Met Ile Lys Glu Arg Leu Pro Lys Leu Leu Gln Gly Val Leu Glu
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               245
Glu Lys Arg His Ile Leu Trp Ser Ile Asp Pro Met His Gly Asn Thr
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Val Lys Thr Ser Leu Gly Val Lys Thr Arg Ala Phe Asp Ser Val Leu
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                                               285
Asp Glu Val Lys Ser Phe Phe Glu Ile His Arg Ala Glu Gly Ser Leu
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                                           300
Ala Ser Gly Val His Leu Glu Met Thr Gly Glu Asn Val Thr Glu Cys
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Ile Gly Gly Ser Gln Ala Ile Thr Glu Glu Gly Leu Ser Cys His Tyr
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Tyr Thr Gln Cys Asp Pro Arg Leu Asn Ala Thr Gln Ala Leu Glu Leu
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Ala Phe Leu Ile Ala Asp Met Leu Lys Lys Gln His Ala
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Ala Val Arg Leu Gly Pro Pro Ile Arg Ser Met Phe Val Gly Asn Ala
ccg ttt tgg ctt tgg ttt ttt aaa gct tgc atg cct tca ctc aaa ttg
                                                                    152
Pro Phe Trp Leu Trp Phe Phe Lys Ala Cys Met Pro Ser Leu Lys Leu
cgc aca atg gat tct ttt ttc aat aag atg caa tta agg gtg atg
                                                                    200
Arg Thr Met Asp Ser Phe Phe Asn Lys Met Met Gln Leu Arg Val Met
                                                                    248
age gaa age aat ege ggg ett gea tge gaa gag ace gee eea ate atg
Ser Glu Ser Asn Arg Gly Leu Ala Cys Glu Glu Thr Ala Pro Ile Met
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ccc aag ctt gaa atc cca caa acc cca tgc aat aaa gcc gta tca atc Pro Lys Leu Glu Ile Pro Gln Thr Pro Cys Asn Lys Ala Val Ser Ile 70 75 80	296
tca aac aac tct tca cgc atc gct tca att tct tta tca taaggctgta Ser Asn Asn Ser Ser Arg Ile Ala Ser Ile Ser Leu Ser 85 90 95	345
aagtaaaatc cttaaacgct tcaaaattca aattcaaatc tgt	388
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Val Met Ser Glu Ser Asn Arg Gly Leu Ala Cys Glu Glu Thr Ala Pro 50 55 60	
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65 70 75 80  Ser Ile Ser Asn Asn Ser Ser Arg Ile Ala Ser Ile Ser Leu Ser  85 90 95	
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ctt gtg gcc tta ttg ccg att tta ttg ttt ttc tta tct tta atg gtt Leu Val Ala Leu Leu Pro Ile Leu Leu Phe Phe Leu Ser Leu Met Val 20 25 30	152
ttt aaa ctc aaa ggt tat aca gcg gcc ttt ttg agc gtg gcc tta tca Phe Lys Leu Lys Gly Tyr Thr Ala Ala Phe Leu Ser Val Ala Leu Ser 35 40 45 50	200
gcc gtt att gcg gtt tta gtg tat aaa atg cct gtt agc atg gtg ggt Ala Val Ile Ala Val Leu Val Tyr Lys Met Pro Val Ser Met Val Gly 55 60 65	248

	~			ggc Gly					_		_		296
				att Ile									344
				aaa Lys									392
				ttg Leu 120									440
				gga Gly			_		_	-			488
				agc Ser									536
				gta Val									584
				gta Val									632
				ttt Phe 200									680
		_	_	ggc Gly				_			_	_	728
				ttt Phe									776
				gaa Glu	_				_		_		824
				ctc Leu				 _			_		872
				aaa Lys 280									920
				gtc Val									968

300 305 295 1016 gtg att gtg cta tgg ata cag cct ttt ttt aaa gcc ttg ttt gaa aaa Val Ile Val Leu Trp Ile Gln Pro Phe Phe Lys Ala Leu Phe Glu Lys gac ggc ttg tta gct ttt tct aat ttt tat ttt gaa ttc aat aac atc 1064 Asp Gly Leu Leu Ala Phe Ser Asn Phe Tyr Phe Glu Phe Asn Asn Ile 330 agt aac cac atc ttt aaa agc ccg cct ttt gta gaa gcc aat caa agc 1112 Ser Asn His Ile Phe Lys Ser Pro Pro Phe Val Glu Ala Asn Gln Ser 345 gtg agt ttt ccg gtg gtg ttt aaa ttt ctc tta atc aac acg gtt ggc 1160 Val Ser Phe Pro Val Val Phe Lys Phe Leu Leu Ile Asn Thr Val Gly 360 1208 act tcc att ttt tta gcc gct ctt gtt agc atg ctc gtt tta agg gtg Thr Ser Ile Phe Leu Ala Ala Leu Val Ser Met Leu Val Leu Arg Val 380 375 1256 cga gtg agc gat gcg ctg agc gtc ttt ggc gag act tta aaa gaa atg Arg Val Ser Asp Ala Leu Ser Val Phe Gly Glu Thr Leu Lys Glu Met 390 395 cgt tac ccc att ctc acc att ggt tta gtc tta agc ttt gcc tat gtg 1304 Arg Tyr Pro Ile Leu Thr Ile Gly Leu Val Leu Ser Phe Ala Tyr Val 410 1352 tot aat tac ago ggg att tot too act ota goo tta gog oto acg cat Ser Asn Tyr Ser Gly Ile Ser Ser Thr Leu Ala Leu Ala Leu Thr His 425 1400 acg ggt ttg gct ttc acc ttt ttc tcg ccc ttg atc ggg tgg gta ggc Thr Gly Leu Ala Phe Thr Phe Phe Ser Pro Leu Ile Gly Trp Val Gly 445 440 1448 gtg ttt tta acc ggg agc gat acg agt tcc aat ctt ttg ttt ggc tct Val Phe Leu Thr Gly Ser Asp Thr Ser Ser Asn Leu Leu Phe Gly Ser 455 460 1496 tta caq caa ctc acc gcc caa cga ttg cac ctc cct gag gtt tta acc Leu Gln Gln Leu Thr Ala Gln Arg Leu His Leu Pro Glu Val Leu Thr 475 cta acg gct aat acc gtg ggt ggc act tta ggc aag atg ata agc cct 1544 Leu Thr Ala Asn Thr Val Gly Gly Thr Leu Gly Lys Met Ile Ser Pro 490 1592 caa agc atc gct atc gct tgc gcg gcg gtg ggg tta gcc ggg aaa gag Gln Ser Ile Ala Ile Ala Cys Ala Ala Val Gly Leu Ala Gly Lys Glu 505 1640 age gat ttg tte aaa tte aeg gtt aaa tae tee ett att ttt gta geg Ser Asp Leu Phe Lys Phe Thr Val Lys Tyr Ser Leu Ile Phe Val Ala 525 520 1688 atc atg gga gtt gtg atc agc gcg att gcg tat ttg atc cct gaa gtg

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Val Pro Ala Ile Lys
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Met Val Phe Lys Leu Lys Gly Tyr Thr Ala Ala Phe Leu Ser Val Ala
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Leu Ser Ala Val Ile Ala Val Leu Val Tyr Lys Met Pro Val Ser Met
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Val Gly Ser Ser Phe Leu Tyr Gly Phe Leu Tyr Gly Leu Trp Pro Ile
                                        75
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Ala Trp Ile Ile Ile Ala Ala Ile Phe Leu Tyr Lys Leu Ser Val Lys
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                                   90
Ser Gly Tyr Phe Glu Ile Leu Lys Glu Ser Val Gln Ser Ile Thr Leu
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           100
                               105
Asp His Arg Ile Leu Val Ile Leu Ile Gly Phe Cys Phe Gly Ser Phe
       115
                           120
                                                125
Leu Glu Gly Ala Ile Gly Phe Gly Gly Pro Ile Ala Ile Thr Ala Ala
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                                           140
Ile Leu Val Gly Leu Gly Leu Ser Pro Leu Tyr Ser Ala Gly Leu Cys
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                                       155
Leu Ile Ala Asn Thr Ala Pro Val Ala Phe Gly Ala Val Gly Ile Pro
                                   170
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Ile Ser Ala Met Ala Ser Ala Val Gly Val Pro Ala Ile Leu Ile Ser
           180
                                185
Ala Met Thr Gly Lys Ile Leu Phe Phe Val Ser Leu Leu Val Pro Phe
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                           200
                                                205
Phe Ile Val Phe Leu Met Asp Gly Phe Lys Gly Ile Lys Glu Thr Phe
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Pro Ala Val Phe Ile Ala Ala Phe Ser Phe Ala Gly Ala Gln Phe Leu
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Ser Ser Asn Tyr Leu Gly Pro Glu Leu Pro Gly Ile Ile Ser Ala Leu
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Val Ser Leu Val Ala Thr Ala Leu Phe Leu Lys Phe Trp Gln Pro Lys
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Ala Ile Phe Arg Ser Asp Gly Lys Ala Ala Ser Phe Thr Lys Ser Asn
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                                                285
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His His Ile Cys Lys Ile Tyr Val Ala Trp Ser Pro Phe Val Ile Leu
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                        295
Val Leu Val Ile Val Leu Trp Ile Gln Pro Phe Phe Lys Ala Leu Phe
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                                        315
Glu Lys Asp Gly Leu Leu Ala Phe Ser Asn Phe Tyr Phe Glu Phe Asn
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Asn Ile Ser Asn His Ile Phe Lys Ser Pro Pro Phe Val Glu Ala Asn
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Gln Ser Val Ser Phe Pro Val Val Phe Lys Phe Leu Leu Ile Asn Thr
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Arg Val Arg Val Ser Asp Ala Leu Ser Val Phe Gly Glu Thr Leu Lys
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Glu Met Arg Tyr Pro Ile Leu Thr Ile Gly Leu Val Leu Ser Phe Ala
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Tyr Val Ser Asn Tyr Ser Gly Ile Ser Ser Thr Leu Ala Leu Ala Leu
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Thr His Thr Gly Leu Ala Phe Thr Phe Phe Ser Pro Leu Ile Gly Trp
                            440
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Val Gly Val Phe Leu Thr Gly Ser Asp Thr Ser Ser Asn Leu Leu Phe
                        455
                                            460
Gly Ser Leu Gln Gln Leu Thr Ala Gln Arg Leu His Leu Pro Glu Val
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Leu Thr Leu Thr Ala Asn Thr Val Gly Gly Thr Leu Gly Lys Met Ile
                                    490
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                485
Ser Pro Gln Ser Ile Ala Ile Ala Cys Ala Ala Val Gly Leu Ala Gly
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            500
                                505
Lys Glu Ser Asp Leu Phe Lys Phe Thr Val Lys Tyr Ser Leu Ile Phe
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Glu Val Val Pro Ala Ile Lys
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                                                                      104
Phe Leu Asn Asp His Ile Asn Val Phe Gly Leu Ile Ala Ala Leu Val
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att tta qtt tta acc atc tat gaa tcc agt tcg ctc att aaa gaa atg
                                                                      152
Ile Leu Val Leu Thr Ile Tyr Glu Ser Ser Leu Ile Lys Glu Met
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                         25
                                                                      200
cgc gac agc aaa tct caa ggt gag ctt gta gaa aat ggg cat ttg att
Arg Asp Ser Lys Ser Gln Gly Glu Leu Val Glu Asn Gly His Leu Ile
 35
                                                                      248
gat ggg ata ggg gag ttt gcc aat aat gtg cca gta ggc tgg atc gca
Asp Gly Ile Gly Glu Phe Ala Asn Asn Val Pro Val Gly Trp Ile Ala
                 55
                                                                      296
agc ttt atg tgc acg att gtg tgg gct ttt tgg tat ttc ttc ttt ggg
Ser Phe Met Cys Thr Ile Val Trp Ala Phe Trp Tyr Phe Phe Gly
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			70					75					80				
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	gcg Ala 100															:	392
aag Lys 115	gaa Glu	ctg Leu	gtg Val	gat Asp	atg Met 120	ggt Gly	caa Gln	ggc Gly	atc Ile	ttt Phe 125	tta Leu	gtc Val	cat His	tgt Cys	tcg Ser 130	4	440
	tgc Cys																488
	gtg Val															!	536
	tct Ser															!	584
	gac Asp 180															•	632
	tct Ser															(	680
	gaa Glu																728
	aag Lys																776
	ggc Gly															;	824
~ ~	aat Asn 260				_				_							;	872
	caa Gln											taa	aacc	ctt		:	918
aga	agat	taa a	agga	aaag	ag a	tgaa	attt	t ta	aacg	gatt	agc						961
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Glu Met Arg Asp Ser Lys Ser Gln Gly Glu Leu Val Glu Asn Gly His
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Leu Ile Asp Gly Ile Gly Glu Phe Ala Asn Asn Val Pro Val Gly Trp
Ile Ala Ser Phe Met Cys Thr Ile Val Trp Ala Phe Trp Tyr Phe Phe
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Phe Gly Tyr Pro Leu Asn Ser Phe Ser Gln Ile Gly Gln Tyr Asn Glu
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               85
Glu Val Lys Ala His Asn Gln Lys Phe Glu Ala Lys Trp Lys His Leu
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           100
Gly Gln Lys Glu Leu Val Asp Met Gly Gln Gly Ile Phe Leu Val His
                                                125
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Cys Ser Gln Cys His Gly Ile Thr Ala Glu Gly Leu His Gly Ser Ala
                                            140
                        135
Gln Asn Leu Val Arg Trp Gly Lys Glu Glu Gly Ile Met Asp Thr Ile
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                                        155
Lys His Gly Ser Lys Gly Met Asp Tyr Leu Ala Gly Glu Met Pro Ala
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                165
                                   170
Met Glu Leu Asp Glu Lys Asp Ala Lys Ala Ile Ala Ser Tyr Val Met
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                               185
                                                    190
Ala Glu Leu Ser Ser Val Lys Lys Thr Lys Asn Pro Gln Leu Ile Asp
                            200
                                                205
       195
Lys Gly Lys Glu Leu Phe Glu Ser Met Gly Cys Thr Gly Cys His Gly
                       215
                                            220
Asn Asp Gly Lys Gly Leu Gln Glu Asn Gln Val Phe Ala Ala Asp Leu
                                       235
                  230
Thr Ala Tyr Gly Thr Glu Asn Phe Leu Arg Asn Ile Leu Thr His Gly
                                250
               245
Lys Lys Gly Asn Ile Gly His Met Pro Ser Phe Lys Tyr Lys Asn Phe
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Ser Asp Leu Gln Val Lys Ala Leu Leu Asn Leu Ser Asn Arg
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Phe Leu Asn Gly Leu Ala Gly Asn Leu Leu Ile Val Val Ile Leu Leu
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tgt gtg gcc gtt ttt ttt acg ctc aaa gcg atc cat atc caa aaa gag

56

104

Cys Val Ala Val Phe Phe Thr Leu Lys Ala Ile His Ile G 20 25 30	ln Lys Glu
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aaa aac acc caa aac cgg gct aac tat gaa tta gtc aat c Lys Asn Thr Gln Asn Arg Ala Asn Tyr Glu Leu Val Asn G 55 60	aa ggg agt 248 In Gly Ser 65
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35 40 45	
Glu Thr Lys Asn Thr Gln Asn Arg Ala Asn Tyr Glu Leu V 50 55 60 Gly Ser Lys Lys 65	/AI ASH GIH
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atg agt aag gtt ttc cca aag ctc gct aaa gcg atc act of Met Ser Lys Val Phe Pro Lys Leu Ala Lys Ala Ile Thr 1	cta gcg gca 152 Leu Ala Ala
aaa gat ggc ggg agc gaa ccg gac acg aac gcc aaa cta Lys Asp Gly Gly Ser Glu Pro Asp Thr Asn Ala Lys Leu 35 40 45	cga aca gcg 200 Arg Thr Ala 50

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gcg Ala	att Ile	aaa Lys	aga Arg 70	gcg Ala	agc Ser	agt Ser	aaa Lys	gaa Glu 75	ggg Gly	aat Asn	ttg Leu	agt Ser	gaa Glu 80	atc Ile	act Thr	296
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act Thr	gat Asp 100	aac Asn	ccc Pro	acc Thr	aga Arg	acc Thr 105	att Ile	gcc Ala	aac Asn	ctt Leu	aaa Lys 110	agc Ser	tat Tyr	ttc Phe	aat Asn	392
aaa Lys 115	acg Thr	caa Gln	ggg Gly	gca Ala	agc Ser 120	atc Ile	gtg Val	cct Pro	aat Asn	ggc Gly 125	tct Ser	tta Leu	gag Glu	ttt Phe	atg Met 130	440
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tta Leu	aaa Lys	ctc Leu	agt Ser 150	cta Leu	gaa Glu	gat Asp	tta Leu	gaa Glu 155	ttc Phe	gct Ala	ctc Leu	att Ile	gat Asp 160	tat Tyr	ggt Gly	536
ttg Leu	gaa Glu	gaa Glu 165	tta Leu	gaa Glu	gaa Glu	gtg Val	gaa Glu 170	gac Asp	aag Lys	atc Ile	att Ile	att Ile 175	agg Arg	ggg Gly	gat Asp	584
tat Tyr	aac Asn 180	agc Ser	ttc Phe	aag Lys	ctt Leu	tta Leu 185	aat Asn	gag Glu	ggg Gly	ttt Phe	gaa Glu 190	agc Ser	ttg Leu	aaa Lys	tta Leu	632
ccc Pro 195	att Ile	tta Leu	aaa Lys	gcg Ala	agt Ser 200	ttg Leu	caa Gln	cgc Arg	atc Ile	gcc Ala 205	aca Thr	acg Thr	ccc Pro	att Ile	gaa Glu 210	680
ttg Leu	aat Asn	gac Asp	gaa Glu	caa Gln 215	atg Met	gag Glu	ctt Leu	acc Thr	gaa Glu 220	Lys	tta Leu	ctg Leu	gac Asp	agg Arg 225	Ile	728
gaa Glu	gac Asp	gat Asp	gat Asp 230	gat Asp	gtg Val	gtc Val	gcg Ala	ctt Leu 235	tat Tyr	acc Thr	aat Asn	att Ile	gag Glu 240			770
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Thr Ala Ile Leu Asn Ala Lys Ala Gln Asn Met Pro Lys Asp Asn Ile
Asp Ala Ala Ile Lys Arg Ala Ser Ser Lys Glu Gly Asn Leu Ser Glu
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Ile Thr Tyr Glu Gly Lys Ala Asn Phe Gly Val Leu Ile Ile Met Glu
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Cys Met Thr Asp Asn Pro Thr Arg Thr Ile Ala Asn Leu Lys Ser Tyr
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Phe Asn Lys Thr Gln Gly Ala Ser Ile Val Pro Asn Gly Ser Leu Glu
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                            120
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Phe Met Phe Asn Arg Lys Ser Val Phe Glu Cys Leu Lys Asn Glu Val
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Glu Asn Leu Lys Leu Ser Leu Glu Asp Leu Glu Phe Ala Leu Ile Asp
                                        155
                    150
Tyr Gly Leu Glu Glu Leu Glu Glu Val Glu Asp Lys Ile Ile Ile Arg
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Gly Asp Tyr Asn Ser Phe Lys Leu Leu Asn Glu Gly Phe Glu Ser Leu
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                               185
Lys Leu Pro Ile Leu Lys Ala Ser Leu Gln Arg Ile Ala Thr Thr Pro
                           200
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Ile Glu Leu Asn Asp Glu Gln Met Glu Leu Thr Glu Lys Leu Leu Asp
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ccc agt Pro Ser		_				_	_	_	~ ~		_		_		392
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aac Asn	atg Met	ctc Leu	tta Leu	gtc Val	gtg Val	gcg Ala	gtg Val	gtt Val	tta Leu	tac Tyr	acg Thr	cat His	aat Asn	tta Leu	gcg Ala	1160

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1208

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1273

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 Ser
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 Gly
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Ala Thr Leu Met Ala Gly Val Leu Gln Ile Leu Leu Gly Tyr Leu Lys

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Val Asn Ala Leu Gly Ile Leu Leu Met Glu Gln Phe Lys Phe Leu
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Gln Asn Gln Asn Leu Gly Val Phe Val Leu Leu Ala Ile Gly Ile Leu 145 150 155 160

Ile Ile Tyr Leu Phe Pro Leu Ile Thr Lys Lys Ile Pro Ser Asn Leu
165 170 175

The Circ The Leu The Wel Ser Ale The Ale Leu The Phe Asp Met His

Ile Cys Ile Leu Ile Val Ser Ala Ile Ala Leu Ile Phe Asp Met His 180 185 190 Ala Pro Asn Leu Gly Ser Ile Glu Gln Gly Val Ser Gly Phe His Phe

195 200 205

Ile Ile Ile Pro Lys Asn Leu Asp Phe Lys Ile Met Ile Glu Leu Leu

210 215 220

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225 230 240

Thr Ala Lys Thr Leu Asp Val Ile Leu Lys Asp Gly Val Ser Asp Lys 245 250 255

Asn Lys Glu Thr Lys Ala Gln Gly Leu Gly Asn Ile Ile Ser Gly Leu 260 265 270

Leu Gly Gly Met Thr Gly Cys Ala Leu Val Gly Gln Ser Ile Ile Asn 275 280 285

Ala Lys Ser Gly Ala Lys Thr Arg Leu Ser Thr Phe Phe Ala Gly Phe 290 295 300

Ser Leu Met Val Leu Ile Leu Val Phe Asn Glu Tyr Val Val Lys Ile 305 310 315 320 320 Pro Ile Val Ala Val Val Ala Val Met Val Met Ile Ser Phe Thr Thr

325 330 335	
Phe Asn Phe Gln Ser Ile Ile Asn Ile Lys Lys Ile Lys Leu Tyr Asp 340 345 350	
Thr Leu Asn Met Leu Leu Val Val Ala Val Val Leu Tyr Thr His Asn 355 360 365	
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ggc acg act tct tta agg cgc tct atg cag atc aaa tta aag cgc cag Gly Thr Thr Ser Leu Arg Arg Ser Met Gln Ile Lys Leu Lys Arg Gln 10 15 20 25	460
gat ttg gac aca gaa agc ttg aga ggg aat gtc caa acc cgt ttg aaa Asp Leu Asp Thr Glu Ser Leu Arg Gly Asn Val Gln Thr Arg Leu Lys 30 35 40	508
aag ctt gaa tgc gga gaa ttt gac gct atc att tta gct gaa gcc ggg Lys Leu Glu Cys Gly Glu Phe Asp Ala Ile Ile Leu Ala Glu Ala Gly 45 50 55	556
ttg tgc cgc cta gaa att caa gga gcg aaa tac cgc aag gct ttt agc Leu Cys Arg Leu Glu Ile Gln Gly Ala Lys Tyr Arg Lys Ala Phe Ser 60 65 70	604
gta gaa gaa atg att cct agc atg ggt cag ggg gct tta ggg gta gaa Val Glu Glu Met Ile Pro Ser Met Gly Gln Gly Ala Leu Gly Val Glu 75 80 85	652
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Leu	Asn	Gly	Gly 125	Cys	Gln	Ile	Pro	Ile 130	Gly	Val	His	Ala	Ser 135	Leu	Met	
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gaa Glu	gtc Val 155	att Ile	act Thr	aaa Lys	gaa Glu	aaa Lys 160	caa Gln	ggg Gly	gat Asp	aaa Lys	act Thr 165	aaa Lys	gcg Ala	ttt Phe	gat Asp	892
tta Leu 170	gtt Val	caa Gln	gag Glu	ctt Leu	tta Leu 175	gaa Glu	gaa Glu	ttt Phe	ttg Leu	caa Gln 180	agc Ser	Gly ggg	gct Ala	aaa Lys	gag Glu 185	940
att Ile	tta Leu	gaa Glu	aag Lys	gcg Ala 190	cag Gln	ttg Leu	ttt Phe	taat	gcgt	tt g	gttta	atcgo	eg et	tagti	tttgt	994
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Arg	Gly	Asn 35	Va1	Gln	Thr	Arg	Leu 40	Lys	Lys	Leu	Glu	Cys 45	G1y	Glu	Phe	
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Phe	Ala	Thr	Leu 100		Lys	Leu	Asn	. Asp 105		Lys	Ser	Ala	Phe 110	Cys	Cys	
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tct tgg gcg gat ttc atc acg gaa ttt cgt gtg gat ttg ata gag atg Ser Trp Ala Asp Phe Ile Thr Glu Phe Arg Val Asp Leu Ile Glu Met 20 25 30	152
gac ggg caa ttg ctt gta act ttt aat gaa att agc ggc aat ttc ggt Asp Gly Gln Leu Leu Val Thr Phe Asn Glu Ile Ser Gly Asn Phe Gly 35 40 45 50	200
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15 20 25

	13																
gtg Val 30	cgc Arg	tat Tyr	cag Gln	ggc Gly	ggg Gly 35	cat His	aat Asn	gct Ala	ggg Gly	cat His 40	acc Thr	att Ile	gtg Val	cat His	aag Lys 45	207	
ggg ggg	gtt Val	aag Lys	cat His	tct Ser 50	ttg Leu	cat His	tta Leu	atg Met	cct Pro 55	tca Ser	ggg ggg	gtt Val	tta Leu	tac Tyr 60	ccc Pro	255	;
aaa Lys	tgc Cys	aag Lys	aac Asn 65	atc Ile	att Ile	tct Ser	agc Ser	gcg Ala 70	gtg Val	gtc Val	gtg Val	agc Ser	gtt Val 75	aag Lys	gat Asp	303	3
ttg Leu	tgc Cys	gaa Glu 80	gaa Glu	atc Ile	agc Ser	gcg Ala	ttt Phe 85	gag Glu	gat Asp	tta Leu	gaa Glu	aat Asn 90	cgt Arg	ttg Leu	ttt Phe	351	L
gtc Val	agc Ser 95	gac Asp	aga Arg	gcc Ala	cat His	gtg Val 100	atc Ile	ttg Leu	ccc Pro	tat Tyr	cat His 105	gcc Ala	aaa Lys	aaa Lys	gac Asp	399	€
gct Ala 110	ttt Phe	aaa Lys	gaa Glu	aaa Lys	tct Ser 115	caa Gln	aac Asn	atc Ile	ggc Gly	acg Thr 120	act Thr	aaa Lys	aaa Lys	ggc	ata Ile 125	44'	7
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ccc Pro 190	ttt Phe	atc Ile	aaa Lys	gac Asp	acg Thr 195	Thr	ago Ser	atg Met	ctg Leu	ata Ile 200	Glu	gcg Ala	aat Asn	caa Gln	aag Lys 205	68	7
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gat Asp	tta Leu	ggg Gly	act Thr 225	Tyr	cct Pro	ttt Phe	gta Val	a aca Thr 230	Ser	tct Ser	aac Asn	acc Thr	acg Thr 235	Ser	gct Ala	78	13
ago Ser	gca Ala	tgc Cys 240	: Val	g ago . Ser	acc Thr	ggc Gly	tta Lei 245	ı Asr	cct Pro	aaa Lys	gcg Ala	g ato 11e 250	e Asr	gaa Glu	a gtc ı Val	83	<b>;1</b>
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	50 Ile	Ile	e Ser	Ser		55 Val	. Val	. Val	. Ser		60 Lys	as Asp	Leu	Cys	Glu 80	
65 Glu	Ile	Ser	: Ala	Phe 85	70 e Glu	ı Asp	Leu	ı Glu	Asr 90	75 n Arg	J Lev	ı Phe	e Val	. Ser 95	Asp	

5

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Tyr Glu Asp Lys Met Ala Arg Ser Gly Ile Arg Met Gly Asp Leu Leu
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Asp Asp Lys Ile Leu Glu Glu Lys Leu Asn Ala His Phe Lys Ala Ile
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Glu Pro Phe Lys Lys Ala Tyr Asp Leu Gly Glu Asn Tyr Glu Lys Asp
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            180
Lys Asp Thr Thr Ser Met Leu Ile Glu Ala Asn Gln Lys Gly Glu Lys
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                                              205
Ile Leu Leu Glu Gly Ala Gln Gly Thr Leu Leu Asp Ile Asp Leu Gly
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Thr Tyr Pro Phe Val Thr Ser Ser Asn Thr Thr Ser Ala Ser Ala Cys
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Val Ser Thr Gly Leu Asn Pro Lys Ala Ile Asn Glu Val Ile Gly Ile
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Asp Thr Thr Pro Met Gly Asp His Leu Arg Thr Lys Gly Ala Glu Phe
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Gly Thr Thr Thr Lys Arg Pro Arg Arg Cys Gly Trp Leu Asp Leu Val
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Ala Leu Lys Tyr Ala Cys Ala Leu Asn Gly Cys Thr Gln Leu Ala Leu
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Val Gly Val Arg Lys Leu Asp Asp Leu Glu Pro Asn Val Arg Glu Tyr
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gcc Ala	c aaa a Lys	aco Thi	tto Phe 230	e Ser	atg Met	tca Ser	gct Ala	att a Ile 235	• G12	g cat 7 His	gag Glu	g ago 1 Sei	gat Asp 240	Pne	t tta e Leu		776
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	-	-			gtt Val 280	_		_	_	_						920
		-			caa Gln											968
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					ggt Gly 215											732
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					gat Asp 295											972
					tat Tyr											1020
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	a Arg	275	,				280	1				285	i			
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 Ser Lys Gly Val Gln Glu Val Val Leu Thr Gly Thr Asn Val Gly Ser
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 Asn Gln Ile Asn Asp Glu Phe Leu Glu Leu Leu Glu Glu Asp Phe Leu
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                             280
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310

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Asp	Ser	Lys	Lys 340	Arg	Leu	Asn	Ala	Ile 345	Lys	Asp	Leu	Ile	Phe 350	His	Lys
Asn	Lys	Ala 355	Phe	Arg	Gln	Leu	Gln 360	Leu	Lys	Leu	Asn	Thr 365	Pro	Leu	Lys
Ala	Leu 370	Val	Glu	Val	Gln	Lys 375	Asp	G1y	Glu	Phe	Lys 380	Ala	Leu	Asp	Gln
Phe 385	Phe	Asn	Pro	Ile	Lys 390	Ile	Lys	Ser	Asp	Lys 395	Pro	Leu	Arg	Ala	Ser 400
Phe	Leu	Glu	Ile	Lys 405	Glu	Tyr	Glu	Ile	Lys 410	Glu	Arg	Glu	Asn	His 415	Ala
Val	Phe														
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					ctt Leu										296
_	_				ttg Leu				~ ~				~	-	344
					tat Tyr										392
		_	-	-	ctt Leu		•	-	_	_	-	_		_	440

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872

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	Pro 130					135					140						
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                                      315
Lys Arg Val His Glu Asn Phe Leu His Leu Gly Val Gly Ser Gly Val
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                                  330
Thr Tyr Lys Ser Lys Ala Pro Lys Glu Tyr Glu Glu Ser Phe Leu Lys
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                              345
                                                  350
Ser Phe Phe Val Met Pro Lys Ile Glu Phe Glu Ile Val Glu Thr Met
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                                              365
Lys Ile Ile Lys Lys Asp Gln Lys Leu Glu Ile Asn Asn Lys Asn Ala
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His Lys Glu Arg Leu Met Asn Ser Thr Arg Tyr Phe Asn Phe Lys Tyr
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Asp Glu Asn Leu Leu Asp Phe Glu Leu Glu Lys Glu Gly Val Leu Arg
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                                   410
Val Leu Leu Asn Lys Lys Gly Lys Leu Ile Lys Glu Tyr Lys Thr Leu
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                               425
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                           440
                                              445
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Gln Lys Ala Arg Ala Leu Ile Lys Lys Gly Val Met Phe Asp Glu Ile
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Phe Tyr Asn Gln Asp Leu Glu Leu Thr Glu Gly Ala Arg Ser Asn Leu
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Ala Leu Asn Gly Thr Gly Val Val Gly Leu Leu Lys Lys Gly Leu Val
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Ser Phe Arg Glu Phe Ile Gln Gln Phe Lys Lys Asn Lys Ala Ala Val
gtt ggg gct tgg att gtg ctt tta ttg gta att tgc gcg att ttt gcg
                                                                   152
Val Gly Ala Trp Ile Val Leu Leu Val Ile Cys Ala Ile Phe Ala
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					ggg Gly											296
					acc Thr											344
			-		cta Leu											392
	-	_			atg Met 120	_		_	_		_		_	_		440
			_		gtg Val					-						488
					gct Ala											536
_	_			_	tcc Ser				_		_		_		-	584
					aat Asn											632
					tgc Cys 200						-		_		-	680
		_		_	gtt Val		_		-	_	_	_				728
					ccc Pro											776
					gct Ala											824
	_				acg Thr	_	_	_			-	_		_		872

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Ala Val Phe Phe Gly Thr Ile Leu Gly Leu Ile Ala Gly Tyr Phe Gly
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Phe Ala Arg Leu Val Arg Ser Ser Val Leu Gly Glu Lys Glu
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Tyr Val Ile Ala Ser Lys Ile Asn Gly Ser Ser His Leu Arg Leu Met
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Cys Lys Val Ile Phe Pro Asn Cys Ile Ile Pro Leu Ile Val Gln Thr
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                            200
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Thr Met Gly Phe Ala Ser Thr Val Leu Glu Ala Ala Ala Leu Ser Phe
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ggt tot ato aat tta atg act aat ato cat gaa gtt aga gaa gtt act Gly Ser Ile Asn Leu Met Thr Asn Ile His Glu Val Arg Glu Val Thr 10 15 20	163
aac tat caa acc ggt tac acc aat att ata act agc gtt aat agc gtt Asn Tyr Gln Thr Gly Tyr Thr Asn Ile Ile Thr Ser Val Asn Ser Val 25 30 35	211
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gct ttt tta gat tgg caa ggc tat ggc atg aga tac cct aaa ggc tat Ala Phe Leu Asp Trp Gln Gly Tyr Gly Met Arg Tyr Pro Lys Gly Tyr 75 80 85	355
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att ggc gtt ttt ggg ggg att gcg att gcg ggg aat agc tgg tat att Ile Gly Val Phe Gly Gly Ile Ala Ile Ala Gly Asn Ser Trp Tyr Ile 120 125 130 135	499
ggc agt aaa ggg cag gaa ttg tta ggt atc act aac agc agc gcg gtt Gly Ser Lys Gly Glu Leu Leu Gly Ile Thr Asn Ser Ser Ala Val 140 145 150	547
gat aac acc tct ttt caa ttc ctc ttt aac ttt ggc ctc aag gct tta Asp Asn Thr Ser Phe Gln Phe Leu Phe Asn Phe Gly Leu Lys Ala Leu 155 160 165	595
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Met Arg Tyr Pro Lys Gly Tyr Tyr Gly Gly Asn Asn Met Ile Thr Tyr
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Gly Val Gly Val Asp Ala Val Trp Asn Phe Phe Gln Gly Ser Phe Tyr
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Gln Asp Asp Ile Ser Val Asp Ile Gly Val Phe Gly Gly Ile Ala Ile
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Ile Thr Asn Ser Ser Ala Val Asp Asn Thr Ser Phe Gln Phe Leu Phe
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Gly Phe Lys Phe Pro Thr Ile Asn Asn Lys Tyr Tyr Thr Thr Asp Ala
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ggg ggt gga acg gta aaa aaa gac ttg aag aaa gcc att caa tac tat
                                                                      104
Gly Gly Thr Val Lys Lys Asp Leu Lys Lys Ala Ile Gln Tyr Tyr
                                                                      152
gtt aaa gcg tgt gaa ttg aat gaa atg ttt ggg tgt ctg tca tta gtt
Val Lys Ala Cys Glu Leu Asn Glu Met Phe Gly Cys Leu Ser Leu Val
     20
                         25
                                                                      200
tcg aac tct caa ata aac aaa caa aaa ctc ttt caa tat ctc tct aaa
Ser Asn Ser Gln Ile Asn Lys Gln Lys Leu Phe Gln Tyr Leu Ser Lys
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35					40					45					50		
	tgt Cys															24	18
	gag Glu															29	96
	tac Tyr															34	14
	gga Gly 100															39	92
	gcg Ala															44	10
_	tgt Cys							taga	attto	gaa a	ataaa	atgci	tg ti	tttt	tagct	49	94
ggc	tttca	atg t	ctttt	gtaa	ac co	cc										51	17
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Mot		400>		Cl.,	πh.~	77-1	Tuo	Tara	λαη	Lou	Two	Tvc	717	Tlo	Cln		
1	Val		_	5					10					15			
Tyr	Tyr	Va⊥	Lys 20	Ala	Cys	GLu	Leu	Asn 25	Glu	Met	Phe	Gly	Cys 30	Leu	Ser		
Leu	Val	Ser	Asn	Ser	Gln	Ile	Asn 40	Lys	Gln	Lys	Leu	Phe 45	Gln	Tyr	Leu		
Ser	Lys 50	-	Cys	Glu	Leu	Asn 55		Gly	Asn	Gly	Cys 60	Arg	Phe	Leu	Gly		
	Phe	Tyr	Glu	Asn			Tyr	Val	Lys	Lys 75		Leu	Arg	Lys			
65 Ala	Gln	Tyr	Tyr		70 Lys	Ala	Cys	Gly		_	Asp	Gln	Asp		80 Cys		
Leu	Ile	Leu		85 Tyr	Lys	Gln	Tyr		90 Gly	Lys	Gly	Val		95 Lys	Asn		
Glu	Lys		100 Ala	Val	Lys	Thr		105 Glu	Lys	Ala	Суѕ		110 Leu	Gly	Ser		
Glu	Asp 130	115 Ala	Cys	Gly	Ile	Leu 135	120 Asn	Asn	Tyr			125					
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Ile Trp Lys Phe
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                                                      Asn Pro Gln
                                                                      106
age ttt ttc agg aat acg cca cat ttt ttg atc agc cga att ttt atc
Ser Phe Phe Arg Asn Thr Pro His Phe Leu Ile Ser Arg Ile Phe Ile
cac cag cat gag aat aaa aat cag aat att gac tat gag caa cca aac
                                                                      154
His Gln His Glu Asn Lys Asn Gln Asn Ile Asp Tyr Glu Gln Pro Asn
gat aga agc aaa ttc cac gct cac cct ttc aag agc gtt tta aca acc
                                                                      202
Asp Arg Ser Lys Phe His Ala His Pro Phe Lys Ser Val Leu Thr Thr
caa acg cta cca ctt ggt ttt tta gag aga gaa aga gag aga aag caa
                                                                      250
Gln Thr Leu Pro Leu Gly Phe Leu Glu Arg Glu Arg Glu Arg Lys Gln
aat ttt aag att gat tct caa atc tat tcc ttt gca aaa gtt aag att
                                                                      298
Asn Phe Lys Ile Asp Ser Gln Ile Tyr Ser Phe Ala Lys Val Lys Ile
ggg tgt ttt aac atg att ttt ggc ctg ctc gca tca agc cct tat ttt
                                                                      346
Gly Cys Phe Asn Met Ile Phe Gly Leu Leu Ala Ser Ser Pro Tyr Phe
taacatttcc gctcccttgc ttttttaaag cctccctaaa ttactacacc act
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      <210> 314
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Asn Pro Gln Ser Phe Phe Arg Asn Thr Pro His Phe Leu Ile Ser Arg
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Ile Phe Ile His Gln His Glu Asn Lys Asn Gln Asn Ile Asp Tyr Glu
            20
                                                     3.0
                                25
Gln Pro Asn Asp Arg Ser Lys Phe His Ala His Pro Phe Lys Ser Val
                            40
Leu Thr Thr Gln Thr Leu Pro Leu Gly Phe Leu Glu Arg Glu Arg Glu
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65	70	75		30
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Pro Tyr Phe				
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aaayacaace ccaace	idacy coccada	adac adacadgaggg	Met S	
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			tat ttc tcg ttg g Tyr Phe Ser Leu V 30	
			agc tat att tct t Ser Tyr Ile Ser I	
			ttc gtg aat agt g Phe Val Asn Ser G 65	
			atg gta att tgc t Met Val Ile Cys I 80	
			atc gtc tat agc g Ile Val Tyr Ser V 95	
			ttt tgc act atc g Phe Cys Thr Ile V 110	
			aat gct caa gag t Asn Ala Gln Glu 1	
His Gln Arg Arg I			agaagtg agtgcttttg	490
tggggactct tttctt	tcatt ggcttga	agtt gc		522

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Val Leu Leu Gly Leu Trp Arg Leu Thr Tyr Asp Lys Phe Tyr Phe Ser
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Leu Val Phe Val Leu Leu Ile Leu Gly Ile Val Ala Cys Ser Tyr Ile
                            40
Ser Leu Lys Met His Gln Arg Lys Cys Phe Ala Lys Cys Phe Val Asn
                        55
Ser Glu Ser Phe Leu Ser Lys Met Leu His Ser Pro Ile Met Val Ile
                                        75
                    70
Cys Phe Tyr Phe Ile Phe Ser Ile Phe Thr Ser Ile Ser Ile Val Tyr
                85
                                    90
Ser Val Leu Asp Tyr Asp Gln Met Met Trp Gly Phe Val Phe Cys Thr
                                                     110
                                105
            100
Ile Val Val Cys Ala Val Val Phe Gly Thr Leu Glu Lys Asn Ala Gln
                                                 125
                            120
Glu Tyr His Gln Arg Arg Leu Phe Asp Ala Asp Val
                        135
    130
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      <211> 976
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                                                                      104
Arg Arg Arg Asn Arg Gly Asp Ala Ser Gly Thr Gly Leu Asp Lys Leu
att qac gct tan cct ttg cgc ttt ttt gat gtc gct atc gct gag caa
                                                                      152
Ile Asp Ala Xaa Pro Leu Arg Phe Phe Asp Val Ala Ile Ala Glu Gln
     20
cac gct tta act tct agc agc gct atg gct aaa gag ggg ttt aaa cct
                                                                      200
His Ala Leu Thr Ser Ser Ser Ala Met Ala Lys Glu Gly Phe Lys Pro
 35
ttt gtg agc atc tat tct act ttt ttg cag agg gct tat gat tct att
                                                                      248
Phe Val Ser Ile Tyr Ser Thr Phe Leu Gln Arg Ala Tyr Asp Ser Ile
                 55
gtg cat gac gct tgt att tct agc ttg ccg att aaa tta gcc att gac
                                                                      296
Val His Asp Ala Cys Ile Ser Ser Leu Pro Ile Lys Leu Ala Ile Asp
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agg Arg	gct Ala	ggg Gly 85	att Ile	gtg Val	ggc Gly	gaa Glu	gat Asp 90	ggc Gly	gag Glu	acg Thr	cac His	caa Gln 95	ggg Gly	ctt Leu	tta Leu	344
											gtc Val 110					392
cga Arg 115	gac Asp	aat Asn	gag Glu	act Thr	tta Leu 120	aaa Lys	aac Asn	gcc Ala	gtg Val	cgt Arg 125	ttt Phe	gcc Ala	aat Asn	gaa Glu	cac His 130	440
gat Asp	tca Ser	agc Ser	cct Pro	tgc Cys 135	gcg Ala	ttc Phe	cga Arg	tac Tyr	cct Pro 140	agg Arg	Gly ggg	tcg Ser	ttt Phe	gcg Ala 145	tta Leu	488
											tta Leu					536
ttg Leu	ttg Leu	aaa Lys 165	aaa Lys	gag Glu	ggc Gly	gaa Glu	att Ile 170	tta Leu	ctc Leu	ata Ile	ggc Gly	tat Tyr 175	ggt Gly	aat Asn	ggc Gly	584
											aaa Lys 190					632
											cct Pro					680
											tat Tyr					728
aat Asn	tac Tyr	aag Lys	ctt Leu 230	gga Gly	ggg Gly	gtg Val	gct Ala	agc Ser 235	gcg Ala	att Ile	tta Leu	gag Glu	ttt Phe 240	ttg Leu	agc Ser	776
											gaa Glu					824
											aaa Lys 270					872
											gat Asp					920
aga cac	tgaa	aaac	aaa a	agcg	ccaa	tg a	aaaa	tatc	c gc	aatt	tttc	cat	tato	gct		973 976

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Glu Gln His Ala Leu Thr Ser Ser Ser Ala Met Ala Lys Glu Gly Phe
                            40
Lys Pro Phe Val Ser Ile Tyr Ser Thr Phe Leu Gln Arg Ala Tyr Asp
                        55
Ser Ile Val His Asp Ala Cys Ile Ser Ser Leu Pro Ile Lys Leu Ala
                    70
Ile Asp Arg Ala Gly Ile Val Gly Glu Asp Gly Glu Thr His Gln Gly
                85
                                    90
Leu Leu Asp Val Ser Tyr Leu Arg Ser Ile Pro Asn Met Val Ile Phe
                               105
           100
Ala Pro Arg Asp Asn Glu Thr Leu Lys Asn Ala Val Arg Phe Ala Asn
                                                125
                            120
       115
Glu His Asp Ser Ser Pro Cys Ala Phe Arg Tyr Pro Arg Gly Ser Phe
                                            140
                       135
Ala Leu Lys Glu Gly Val Phe Glu Pro Ser Gly Phe Val Leu Gly Gln
                   150
                                        155
Ser Glu Leu Leu Lys Lys Glu Gly Glu Ile Leu Leu Ile Gly Tyr Gly
                                                        175
                                   170
               165
Asn Gly Val Gly Arg Ala His Leu Val Gln Leu Ala Leu Lys Glu Lys
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                               185
Asn Ile Glu Cys Ala Leu Leu Asp Leu Arg Phe Leu Lys Pro Leu Asp
                            200
                                                205
Pro Asn Leu Ser Ala Ile Val Ala Pro Tyr Gln Lys Leu Tyr Val Phe
                                           220
                       215
Ser Asp Asn Tyr Lys Leu Gly Gly Val Ala Ser Ala Ile Leu Glu Phe
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                                       235
Leu Ser Glu Gln Asn Ile Leu Lys Pro Val Lys Ser Phe Glu Ile Ile
                                   250
                245
Asp Glu Phe Ile Met His Gly Asn Thr Ala Leu Val Glu Lys Ser Leu
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Gly Leu Asp Thr Glu Ser Leu Thr Asp Ala Ile Leu Lys Asp Leu Gly
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Gln Glu Arg
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                                                                      104
Leu Leu Phe Thr Gly Ala Cys Gly Tyr Ile Gly Ser His Thr Ala Arg
gcg ttt tta gaa aaa acc aaa gaa aat atc att att gta gat gac tta
                                                                     152
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Ala	Phe 20	Leu	Glu	Lys	Thr	Lys 25	Glu	Asn	Ile	Ile	Ile 30	Val	Asp	Asp	Leu	
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aat Asn	agg Arg	gtt Val	gtg Val	ttt Phe 55	att Ile	caa Gln	gcg Ala	aat Asn	ttg Leu 60	aat Asn	gaa Glu	acg Thr	cac His	aaa Lys 65	tta Leu	248
gac Asp	gcc Ala	ttt Phe	ttg Leu 70	aat Asn	aag Lys	cag Gln	cag Gln	cta Leu 75	aaa Lys	gat Asp	ccc Pro	att Ile	gaa Glu 80	gcc Ala	atc Ile	296
ttg Leu	cac His	ttt Phe 85	gly ggg	gct Ala	aaa Lys	atc Ile	tca Ser 90	gta Val	gaa Glu	gaa Glu	tcc Ser	acg Thr 95	cac His	ttg Leu	cct Pro	344
tta Leu	gaa Glu 100	tac Tyr	tac Tyr	acc Thr	aac Asn	aac Asn 105	acg Thr	ctc Leu	aac Asn	act Thr	tta Leu 110	gag Glu	ctt Leu	gtc Val	aaa Lys	392
ctt Leu 115	tgc Cys	tta Leu	aaa Lys	cat His	gca Ala 120	atc Ile	aag Lys	cgt Arg	ttt Phe	att Ile 125	ttt Phe	tct Ser	tct Ser	acg Thr	gcc Ala 130	440
gtg Val	gtt Val	tat Tyr	ggc Gly	gaa Glu 135	tct Ser	agt Ser	tca Ser	agt Ser	ttg Leu 140	aat Asn	gaa Glu	gaa Glu	agc Ser	ccc Pro 145	tta Leu	488
aac Asn	ccc Pro	att Ile	aat Asn 150	cct Pro	tat Tyr	gga Gly	gcg Ala	tct Ser 155	aaa Lys	atg Met	atg Met	agc Ser	gaa Glu 160	aga Arg	atc Ile	536
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tat Tyr	ttc Phe 180	Asn	Val	Ala	ggg ggg	Ala	Cys	Met	His	Asn	Asp	Tyr	acc Thr	acc Thr	cct Pro	632
tac Tyr 195	acg Thr	cta Leu	ggg Gly	caa Gln	cgc Arg 200	acg Thr	ctc Leu	aac Asn	gcc Ala	acg Thr 205	cat His	ttg Leu	atc Ile	aaa Lys	atc Ile 210	680
gca Ala	tgc Cys	gaa Glu	tgc Cys	gcg Ala 215	gtg Val	ggg Gly	aaa Lys	agg Arg	aaa Lys 220	aaa Lys	atg Met	gly ggg	att Ile	ttt Phe 225	ggc Gly	728
act Thr	aac Asn	tac Tyr	ccc Pro 230	aca Thr	aga Arg	gat Asp	ggc Gly	act Thr 235	tgc Cys	att Ile	agg Arg	gat Asp	tat Tyr 240	atc Ile	cat His	776
gta Val	gat Asp	gat Asp 245	ttg Leu	gct Ala	aac Asn	gca Ala	cat His 250	tta Leu	gcg Ala	agc Ser	tat Tyr	caa Gln 255	Thr	ctt Leu	tta Leu	824

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,	agc Ser 275	gtg Val	aaa Lys	gaa Glu	gtg Val	ata Ile 280	gaa Glu	aag Lys	gtc Val	aaa Lys	gaa Glu 285	atc Ile	tca Ser	aac Asn	aac Asn	gat Asp 290	920
						tta Leu											968
	att Ile	gcc Ala	aat Asn	aac Asn 310	gct Ala	aaa Lys	atc Ile	tta Leu	caa Gln 315	aac Asn	acc Thr	tct Ser	ttc Phe	aaa Lys 320	ccc Pro	ctt Leu	1016
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	1 Ala Asp Tyr Lys 65 Ala Leu	Ala Arg Leu Pro 50 Leu Ile Pro	213> 400> Leu Ala Ser 35 Asn Asp Leu Leu Leu	Hel: 320 Leu Phe 20 Thr Arg Ala His Glu 100	Phe 5 Leu Gly Val Phe Phe 85 Tyr	Thr Glu Phe Val Leu 70 Gly	Gly Lys Leu Phe 55 Asn Ala	Ala Thr Glu 40 Ile Lys Lys Asn Ala	Lys 25 His Gln Gln Ile Asn 105	10 Glu Leu Ala Gln Ser 90 Thr	Asn Lys Asn Leu 75 Val Leu	Ile Ala Leu 60 Lys Glu Asn	Ile Leu 45 Asn Asp Glu Thr	Ile 30 Glu Glu Pro Ser Leu 110	15 Val His Thr Ile Thr 95 Glu	Asp Tyr His Glu 80 His Leu	
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1 Phe Ser Pro Leu 65 Ala Val	<pre><? <! color</td><td>212> 213> 400> Glu Ile Leu 35 Leu Asp Lys</td><td>PRT Hel: 334 Val Glu 20 Glu Val Ala Ala Leu 100 Lys</td><td>His 5 Lys Ile Arg Phe Val 85 Val</td><td>Asp Gly Val Phe Ser 70 Phe</td><td>Tyr Leu Gln Pro 55 Ser Pro Gly</td><td>Gly Val Ser 40 His Ala Leu</td><td>Lys 25 Val Leu Ile Lys Lys 105</td><td>10 Val Arg Val Lys Val 90 Gly</td><td>Cys Asp Gln Glu 75 Asn Leu</td><td>His Lys Lys 60 Tyr Gln Asn</td><td>Gly 45 Gln Gln Met</td><td>Lys 30 Tyr Ile Tyr Pro Gly 110</td><td>15 Asn Arg Lys Ser Ser 95 Leu</td><td>Pro Gly Ser Gly 80 Phe Glu</td><td></td></pre>	212> 213> 400> Glu Ile Leu 35 Leu Asp Lys	PRT Hel: 334 Val Glu 20 Glu Val Ala Ala Leu 100 Lys	His 5 Lys Ile Arg Phe Val 85 Val	Asp Gly Val Phe Ser 70 Phe	Tyr Leu Gln Pro 55 Ser Pro Gly	Gly Val Ser 40 His Ala Leu	Lys 25 Val Leu Ile Lys Lys 105	10 Val Arg Val Lys Val 90 Gly	Cys Asp Gln Glu 75 Asn Leu	His Lys Lys 60 Tyr Gln Asn	Gly 45 Gln Gln Met	Lys 30 Tyr Ile Tyr Pro Gly 110	15 Asn Arg Lys Ser Ser 95 Leu	Pro Gly Ser Gly 80 Phe Glu	

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Glu Gly Leu Asn Glu Leu Lys Thr Ile Ile Ala Val Ala Lys Gln Asn
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Glu Phe Leu Ala Cys Pro Lys Ile Gly Ile Arg Ile Arg Leu His Ser
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Thr Gly Thr Gly Val Trp Ala Lys Ser Gly Gly Ile Asn Ser Lys Phe
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Gly Leu Ser Ser Thr Glu Val Leu Glu Ala Met Arg Leu Leu Glu Glu
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                                         220
Asn Asp Leu Leu Glu His Phe His Met Ile His Phe His Ile Gly Ser
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Gln Ile Ser Asp Ile Ser Pro Leu Lys Lys Ala Leu Arg Glu Ala Gly
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Asn Leu Tyr Ala Glu Leu Arg Lys Met Gly Ala Lys Asn Leu Asn Ser
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Val Asn Ile Gly Gly Gly Leu Ala Val Glu Tyr Thr Gln His Lys His
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His Gln Asp Lys Asn Tyr Thr Leu Glu Glu Phe Ser Ala Asp Val Val
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Phe Leu Leu Arg Glu Ile Val Lys Asn Lys Gln Glu Ile Glu Pro Asp
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Ile Phe Ile Glu Ser Gly Arg Tyr Ile Ser Ala Asn His Ala Val Leu
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Val Ala Pro Val Leu Glu Leu Phe Ser His Glu Tyr Asn Glu Lys Ser
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                             345
Leu Lys Ile Lys Glu Asn Asn Asn Pro Pro Leu Ile Asp Glu Met Leu
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Asp Leu Leu Ala Asn Ile Asn Glu Lys Asn Ala Ile Glu Tyr Leu His
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Asp Ser Phe Asp His Thr Glu Ser Leu Phe Thr Leu Phe Asp Leu Gly
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Tyr Ile Asp Leu Ile Asp Arg Ser Asn Thr Glu Val Leu Ala His Leu
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Ser Leu Trp Asp Ile Thr Cys Asp Ser Asp Gly Glu Ile Ala Phe Asp
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Ser Thr Lys Pro Leu Phe Leu His Asp Ile Asp Ile Asp Glu Glu Glu
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Tyr Phe Leu Ala Phe Phe Leu Val Gly Ala Tyr Gln Glu Val Leu Gly
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                          520
Met Lys His Asn Leu Phe Thr His Leu Arg Asn Leu Ala Trp Phe Leu
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														1		
		tta Leu 5														104
tta Leu	acc Thr 20	aaa Lys	aga Arg	gtt Val	aga Arg	aag Lys 25	aag Lys	att Ile	ttt Phe	aag Lys	aat Asn 30	gat Asp	ccc Pro	aca Thr	gaa Glu	152
aat Asn 35	caa Gln	aaa Lys	aaa Lys	gcc Ala	ata Ile 40	aag Lys	atc Ile	gct Ala	cta Leu	aat Asn 45	acc Thr	cct Pro	gat Asp	att Ile	gct Ala 50	200
		caa Gln														248
att Ile	tgt Cys	gag Glu	aga Arg 70	ttg Leu	ttt Phe	gaa Glu	gaa Glu	tac Tyr 75	cct Pro	aag Lys	gat Asp	aaa Lys	aat Asn 80	atc Ile	aag Lys	296
		att Ile 85														344
cgt Arg	gag Glu 100	cgc Arg	atc Ile	aaa Lys	gta Val	ggg Gly 105	gga Gly	ttg Leu	ccc Pro	act Thr	ttt Phe 110	aaa Lys	ttt Phe	ggt Gly	gct Ala	392
		aat Asn														440
		ttg Leu														488
aaa Lys	ctg Leu	caa Gln	aaa Lys 150	tta Leu	ggg Gly	gat Asp	tat Tyr	gaa Glu 155	aat Asn	ata Ile	gaa Glu	aaa Lys	att Ile 160	ttg Leu	gat Asp	536
		gaa Glu 165														584
		tta Leu											taa	ttct	tct	633
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Asn Ala Ile Cys Glu Arg Leu Phe Glu Glu Tyr Pro Lys Asp Lys Asn
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            100
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                                                125
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Leu Asn Glu Arg Leu Arg Glu Phe Ala Glu Thr Leu Ile Glu Ser Val
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                                            140
Arg Lys Leu Gln Lys Leu Gly Asp Tyr Glu Asn Ile Glu Lys Ile
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                   150
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                            Met Gln Glu Arg Val Phe Lys Arg Lys
                                                                      160
gtt tta gat gcg aat atc tta aaa gaa atg cat gcg aac aat gtc tgt
Val Leu Asp Ala Asn Ile Leu Lys Glu Met His Ala Asn Asn Val Cys
                     15
tat tcc aag cat tca aaa gat agg ttt att cct ttc aaa ttt gat aaa
                                                                      208
Tyr Ser Lys His Ser Lys Asp Arg Phe Ile Pro Phe Lys Phe Asp Lys
ttt ggt tat gtt gga tgt aaa ctt ttt aaa aag ata tta aac ttt cct
                                                                      256
Phe Gly Tyr Val Gly Cys Lys Leu Phe Lys Lys Ile Leu Asn Phe Pro
                                                                      304
age aat aca act tte ttt ggt gge aca ggt tgt aag aaa ete atg gaa
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Ser	Asn	Thr 60	Thr	Phe	Phe	Gly	Gly 65	Thr	Gly	Cys	Lys	Lys 70	Leu	Met	Glu	
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	cgc Arg			_			_	_			-	-	-			400
	cat His															448
_	aac Asn															496
	gaa Glu															544
	agc Ser 155															592
	tta Leu		_	_	_				_		_			_		640
	ttg Leu															688
	ttg Leu				_	_				_				_	~	736
	tat Tyr	_			_								_	_		784
	caa Gln 235															832
	tct Ser		-	-	-					taaa	agaag	gac a	aaagg	gataa	aa	882
aat	gcaat	tc o	ccact	caaa	aa aa	agatt	taag	g а								913
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Leu Phe Lys Lys Ile Leu Asn Phe Pro Ser Asn Thr Thr Phe Phe Gly
Gly Thr Gly Cys Lys Lys Leu Met Glu Leu Leu Ser Glu Ile Val Ile
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                                        75
Asp Ser Arg Ser Ser Lys Ile Ala Leu Asn Arg His Tyr Ala Leu Thr
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                                    90
Arg Leu Gln Trp Cys Asp Arg Thr Leu Arg His Asn Leu Gln Ile Leu
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            100
Glu Arg Ile Gly Phe Leu Thr Ala Phe Lys Asn Lys Lys Gly Tyr Ile
                            120
Phe Leu Ser Met His Asp Phe Thr Lys Ile Glu Asn Tyr Glu His Ser
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Gly Leu Asn Gly Glu Ser Asn Leu Pro Asn Ser Phe Phe Leu Gly Ile
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                   150
Cys Gly Tyr Leu Lys Lys Leu Phe Lys Lys Leu Lys Asp Arg Ala Phe
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Arg Leu Ala Asn Lys His Gly Val Phe Phe Leu Lys Ile Pro Lys His
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Phe Gln Met Gln Asn Phe Asn Asn Ile Phe Leu Glu Phe Val Ser Val
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Asn Asn Pro Cys Phe Ser Tyr Arg Leu Thr Tyr Asp Gln Leu Val Gly
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                                            220
Lys Lys Ile Pro Asn Ile Lys Cys Ser Tyr Gln Gln Ala Ile Val Lys
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Leu Glu Glu Leu Tyr Ala Pro Asn His Ile Glu Arg Leu Lys Ala Arg
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agt ttt tta aga tcg att gct ttt ttt gat gat ttt agc gct tct ttt
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Ser Phe Leu Arg Ser Ile Ala Phe Phe Asp Asp Phe Ser Ala Ser Phe
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gaa tac aga gat cta ttt agc gtt ttg gaa aat atc gtg caa ttt gat
Glu Tyr Arg Asp Leu Phe Ser Val Leu Glu Asn Ile Val Gln Phe Asp
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	gaa Glu															248
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	cga Arg					_			_	_	_		-		_	344
	aaa Lys 100															392
-	aag Lys	_	_	_			_	_	-	-	_	_				440
_	aat Asn	_		-					-	_				_		488
	aga Arg					_			_							536
~ ~	tta Leu			_			-			_			_	_		584
	att Ile 180															632
_	aag Lys				_				-		-				_	680
	gtg Val															728
	tac Tyr		_									-		-		776
	aga Arg															824
	aaa Lys 260															872
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Phe 275	Glu	Asn	Glu	Leu	Arg 280	Gln	Pro	Ile	Asn	Leu 285	Asp	Gln	Glu	Ile	Pro 290	
					aag Lys											968
					ttc Phe											1016
					ccc Pro											1064
					ggc Gly											1112
					aaa Lys 360											1160
					gaa Glu											1208
	~	_			aaa Lys			-		-	_		_			1256
	_	_			aaa Lys	-	-						_	_	_	1304
					ttg Leu											1352
_	Arg	Tyr	Asn	Ser	gtg Val 440	Asp	Leu	Val	Val	Lys	Glu				-	1400
					tgt Cys											1448
					ctt Leu											1496
					aga Arg											1544
					ttg Leu											1592

											att Ile			1	L640
											cct Pro			1	1688
-	-	_	_	_		-			_	-	aaa Lys 560			1	L736
							_			-	aat Asn	_	_	1	L784
_			_				_				ttt Phe			1	1832
											att Ile			1	1880
											gat Asp			1	1928
											cct Pro 640			1	1976
											tta Leu			Ź	2024
											aaa Lys			2	2072
											aat Asn			2	2120
											cat His			2	2168
	_		 _				_				ggc Gly 720	-		Ź	2216
											aaa Lys			2	2264
					-						tta Leu			2	2312

aca Thr 755	gct Ala	aaa Lys	aat Asn	tct Ser	tat Tyr 760	caa Gln	aga Arg	aaa Lys	cct Pro	cta Leu 765	gat Asp	gag Glu	aaa Lys	att Ile	aaa Lys 770	23	360
cac His	aga Arg	ata Ile	gaa Glu	gcg Ala 775	ctc Leu	aaa Lys	aga Arg	atc Ile	aag Lys 780	tat Tyr	cct Pro	tgt Cys	tta Leu	aaa Lys 785	att Ile	24	408
					ctt Leu											24	456
gct Ala	act Thr	ccc Pro 805	ttt Phe	aaa Lys	gaa Glu	tat Tyr	ttg Leu 810	aag Lys	cgg Arg	tta Leu	gaa Glu	gaa Glu 815	tat Tyr	tat Tyr	ttt Phe	25	504
					aga Arg											25	552
agc Ser 835	cgc Arg	ttg Leu	aat Asn	gat Asp	agt Ser 840	att Ile	ccc Pro	gca Ala	aaa Lys	tta Leu 845	caa Gln	caa Gln	gaa Glu	ttt Phe	att Ile 850	20	600
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					acg Thr											20	696
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					gct Ala											2'	792
ttg Leu 915	aag Lys	cgt Arg	ata Ile	gaa Glu	gag Glu 920	tgt Cys	ttg Leu	aaa Lys	aat Asn	cct Pro 925	gag Glu	tca Ser	ttt Phe	tat Tyr	ttc Phe 930	2	840
					ttg Leu											2	888
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					aaa Lys											2	984
					cta Leu											3	032

980 985 990

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295

310

Asp Met Phe Ser Pro Glu Pro Phe Ala Leu Leu Val Gly Asn Gly Asn 315

Glu Glu Lys Ile Leu Lys Leu Pro Leu Leu Val Lys Lys Gln Glu Asn

300

3	Ш <u>а</u>	177	т1 а	325	77-	7.00	01	7.7.	330	C1.	Tug	т10	λαη	335 G111	Larc
	Thr	_	340					345					350		
	Tyr	355					360					365			
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Tyr 385	Leu	Leu	Asp	Asp	Asn 390	Ile	Lys	Asn	Phe	Glu 395	Phe	Ala	Lys	Ile	Lys 400
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Val	Met 610	Glu	Trp	Gln	Arg	Ile 615	Asp	Arg	Val	Glu	Leu 620	Pro	Thr	Pro	Asp
Ser 625	Ile	Lys	Lys	Pro	Ser 630	Ile	Asp	Glu	Leu	Lys 635	Asn	Asp	Phe	Asn	Pro 640
Lys	Arg	Gly	Lys	Ser 645	Ser	Asp	Leu	Phe	Glu 650	Trp	Ala	Leu	Glu	Gln 655	Leu
Glu	Thr	Leu	Lys 660	Asp	Leu	Asn	Ser	Pro 665	Pro	Arg	Phe	Val	Leu 670	Glu	Lys
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Glu	Leu 690	Phe	Tyr	Ile	Met	Glu 695	Thr	Asn	Gly	Lys	Lys 700	Val	Phe	Cys	His
Ser 705	Arg	Gln	Cys	Lys	Gly 710	Ser	Val	Asn	Lys	Asp 715	Glu	Leu	Ser	Leu	Gly 720
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Leu	Asn	Thr 755	Ala	Lys	Asn	Ser	Tyr 760	Gln	Arg	Lys	Pro	Leu 765	Asp	Glu	Lys
Ile	Lys 770		Arg	Ile	Glu	Ala 775	Leu	Lys	Arg	Ile	Lys 780	Tyr	Pro	Cys	Leu
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Phe Ile Asn Leu Pro Ser Thr Asp Phe Leu Ser Arg Cys Leu Gly Ser
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Lys Phe Leu Glu Asn Leu Met Ala Gln Thr Ser Leu Glu Gln Gln Lys
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                               905
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Asp Phe Leu Lys Arg Ile Glu Glu Cys Leu Lys Asn Pro Glu Ser Phe
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Tyr Phe Ser Ser Ala Cys Glu Leu Leu Leu Ala Phe Leu Ser Tyr Arg
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Asn Ala Lys Arg Glu Leu Glu Leu Ile Pro Glu Ser Glu Lys Thr Met
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Arg Leu Leu Asp Ser Ile Asp Lys Ala Ile Glu Lys Glu Thr Glu Ile
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Lys Ser Phe Val Lys Leu Glu Leu Lys Asn Gln Ser Phe Asn Asn Ile
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Pro Pro Leu Leu Ser Ala Leu Arg Leu Tyr Leu Arg Gly Asp Leu Glu
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	ttc Phe															344
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		Ala	Thr	Asn		Met	Asp	Tyr	Gln	Glu	atg Met		Tyr			825
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											tta Leu					921
											cac His					969
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GLY	Pne	LVS	HIS	GLU	Val	ьeu	Ala		Mec	пеи	цуъ	Arg		цуз	GIU	
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